SIXTH ANNUAL REPORT

OF THE

BOARD OF TRUSTEES

OF THE

OHIO AGRICULTURAL AND MECHANICAL COLLEGE,

TO THE

GOVERNOR OF THE STATE OF OHIO,

FOR THE YEAR 1876.

COLUMBUS:
NEVINS & MYERS, STATE PRINTERS.
1876.

COLUMBUS, *November* 26, 1876.

HON. R. B. HAYES, *Governor of Ohio:*

SIR: I have the honor to transmit to you the sixth annual report of the Board of Trustees of the Ohio Agricultural and Mechanical College.

Very respectfully,

J. SULLIVANT, *Secretary.*

BOARD OF TRUSTEES.

HON. RALPH LEETE, *President*	Ironton.
JOSEPH SULLIVANT, Esq., *Secretary*	Columbus.
HON. ALEXANDER WADDLE	South Charleston.
HON. WARREN P. NOBLE	Tiffin.
HON. WILLIAM LARWILL	Bucyrus.
HENRY S. BABBITT, M.D., *Treasurer*	Columbus.

FACULTY.

EDWARD ORTON, PH.D.,
PRESIDENT, AND PROFESSOR OF GEOLOGY.

T. C. MENDENHALL, A.M.,
PROFESSOR OF PHYSICS AND MECHANICS.

SIDNEY A. NORTON, A.M., M.D.,
PROFESSOR OF GENERAL AND APPLIED CHEMISTRY.

JOSEPH MILLIKIN, A.M.,
PROFESSOR OF THE ENGLISH LANGUAGE AND LITERATURE, AND OF THE FRENCH AND GERMAN LANGUAGES.

NORTON S. TOWNSHEND, M.D.,
PROFESSOR OF AGRICULTURE.

R. W. McFARLAND, A.M.,
PROFESSOR OF MATHEMATICS AND CIVIL ENGINEERING.

ALBERT H. TUTTLE, M.SC.,
PROFESSOR OF ZOOLOGY AND COMPARATIVE ANATOMY.

WILLIAM COLVIN,
PROFESSOR OF POLITICAL ECONOMY AND CIVIL POLITY.

LUIGI LOMIA,
First Lieut. Fifth Artillery, U. S. A.
PROFESSOR OF MILITARY SCIENCE AND TACTICS.

JOSIAH R. SMITH, A.B.,
ASSISTANT PROFESSOR OF THE LATIN AND GREEK LANGUAGES.

THOMAS MATHEW,
INSTRUCTOR IN FREE-HAND AND MECHANICAL DRAWING.

ALICE WILLIAMS,
ASSISTANT IN DEPARTMENT OF MODERN LANGUAGES.

JOSIAH R. SMITH, A.B.,
LIBRARIAN.

REPORT OF THE BOARD OF TRUSTEES.

The past year has been one of progress and success for the Ohio Agricultural and Mechanical College. With an able, zealous, and harmonious faculty, a body of orderly, attentive, and diligent students, the daily routine of duty has been maintained without friction, and made more efficient and better adapted to promote the attainment of sound and thorough education, which is the great aim of this institution.

At the request of the Trustees, the plans and methods of study, with work and results during the past year, have been set forth with some fullness in the reports of the President and Professors, to which reference may be made for particulars.

The Treasurer's report exhibits the financial condition of the College, the receipts and disbursements.

The farm year begins April 1, at which time the annual report of the Farm Superintendent is made to the Board of Trustees. This report, made last April, will be found at the close of the "Proceedings of the Board."

The report of Mr. Leete, relative to the remnants of lands in the Virginia Military District of this State donated to this College, furnishes all the particulars necessary to a full understanding of this subject and the action of the Board in the premises.

On the grounds, generally, as much work has been done as our circumstances would allow, in the way of grading and graveling, sodding, cleaning up, straightening the channel of the brook, making walks, new fences, roads, gates, etc. The planting of trees and shrubbery was attended to at the proper season, as far as our limited means permitted appropriations for this purpose, but very much more in this direction is necessary before the plans agreed upon can be completed; and owing to the large space to be covered and the newness of the operations, not much improvement is yet visible, but will become more apparent as the trees increase in age and the general plan approaches development, which latter will require considerable expenditures. For the more speedy and economical ornamentation of the grounds plant-houses and propagating pits are needed, as well as for an arboretum, botanic garden, and the thorough teaching of botany and forestry.

In order that our valuable property might be promptly brought within

the protection of the city fire department, it was found necessary to establish a telegraph line connecting the College with the effective system of fire alarms now in operation. This was done; and the Western Union Telegraph Company have also kindly permitted us to make connection with their office in the city, to the great convenience of professors and students.

During the summer vacation very considerable repairs to roofs of the buildings, and painting those of the College and boarding-house and the porches, and plastering in both, were found to be necessary.

Within the College building additional furniture, chairs, tables, shelving, blackboards, and many necessary conveniences have been placed during the past year. A handsome black-walnut wall-case has been built in the library, and a plainer one in the physical laboratory for the preservation and display of a valuable set of models.

The geological museum has been provided with some convenient and substantial table-cases for the display of the collections so fully exhibiting the mineral resources of the State; but here, also, much remains to be supplied before the collection can be adequately cared for and protected.

For the chemical department additional working-tables for analysis have been built and furnished, and a new room provided and fitted for the especial study and demonstration of spectroscopy, now become so important a means of analysis in physical investigations.

A dark room, very completely supplied with apparatus for photometric analysis and research, has been fitted for the physical laboratory, and another one for mechanical experiments, to which a fine lathe and a few tools have been added; and we must urge, as we have in former reports, that great practical advantages would ensue if a small work-shop, well stocked with tools, could be provided for the sudents pursuing mechanical studies.

Additions to the amount of several hundred dollars have been made to our small but valuable library; and to the drawing department additional casts, models, new lithographic stones, and increased facilities have been supplied, but here a larger lithographic press is much needed.

In three of our departments portions of various materials are consumed in daily work, and these, with unavoidable waste and breakage of utensils, have to be continually replaced.

From this brief statement it will be seen that large demands in the way of necessary repairs, improvements, and additions are constantly occurring, the expense of which, in many cases, ought not to be borne by the special funds of the College, but provided for in the same way as are similar cases in all our other State institutions.

The law of Congress establishing agricultural and mechanical colleges made it incumbent that military tactics should be taught therein, and accordingly the Trustees of our institution have provided such instruction. At an early period of its existence application was made to the General Government for the detail of a competent army officer to inaugurate and supervise this work, and in June last this request was complied with by the assignment of First Lieutenant Luigi Lomia, of the 5th Artillery, to our College. Lieut. Lomia joined us at the opening of the present session, and has ever since been zealously, acceptably, and successfully discharging the duties assigned to him. For the arms and accoutrements so indispensable to the efficiency of this service, application was made last winter to the Legislature, which was refused; but now that a sufficient number of arms have been obtained from the United States Government, the military drill promises to become a most desirable and valuable adjunct to the College exercises. The large east room in the basement has been prepared for an armory and drill-room.

Hitherto mathematics and engineering have formed but one chair, under charge of Prof. McFarland; but owing to the increased number of students and the consequent greater demand on the time of the Professor, and in order to give engineering and surveying greater prominence in the future, it was thought best at the beginning of this college year to leave engineering entirely to its able teacher, and relieve him of some purely mathematical classes, which, by special arrangement, have been assigned to Lieut. Lomia.

The number of students, and their distribution into classes, with the branches they are pursuing, will be found in the reports of the President and Professors. The general course of studies is given elsewhere.

The following persons connected with the College receive yearly salaries equal to the amount opposite their names:

FACULTY.

EDWARD ORTON, PH.D., ($3,500)
PRESIDENT, AND PROFESSOR OF GEOLOGY.

T. C. MENDENHALL, A.M., ($2,500)
PROFESSOR OF PHYSICS AND MECHANICS.

SIDNEY A. NORTON, A.M., M.D., ($2,500)
PROFESSOR OF GENERAL AND APPLIED CHEMISTRY.

JOSEPH MILLIKIN, A.M., ($2,500)
PROFESSOR OF THE ENGLISH LANGUAGE AND LITERATURE, AND OF THE FRENCH AND GERMAN LANGUAGES.

NORTON S. TOWNSHEND, M.D., ($2,500)
PROFESSOR OF AGRICULTURE.

R. W. McFARLAND, A.M., ($2,500)
PROFESSOR OF MATHEMATICS AND CIVIL ENGINEERING.

ALBERT H. TUTTLE, M.Sc., ($2,500)
PROFESSOR OF ZOOLOGY AND COMPARATIVE ANATOMY.

WILLIAM COLVIN, ($2,500)
PROFESSOR OF POLITICAL ECONOMY AND CIVIL POLITY.

LUIGI LOMIA,* ($500)
First Lieut. Fifth Artillery, U. S. A.,
PROFESSOR OF MILITARY SCIENCE AND TACTICS.

JOSIAH R. SMITH, A.B., ($1,500)
ASSISTANT PROFESSOR OF THE LATIN AND GREEK LANGUAGES.

THOMAS MATHEW, ($750)
INSTRUCTOR IN FREE-HAND AND MECHANICAL DRAWING.

ALICE WILLIAMS, ($450)
ASSISTANT IN DEPARTMENT OF MODERN LANGUAGES.

J. SULLIVANT, ($2,000)
SECRETARY AND GENERAL AGENT OF THE BOARD OF TRUSTEES.

HENRY S. BABBITT, ($400)
TREASURER.

S. S. MARTIN, ($750)
JANITOR AND CARPENTER.

The club-house, built for the accommodation of students desiring to board themselves, is full, and there is a greater demand for this kind of accommodation than we can supply.

An asphalt pavement and street railroad have been completed on North High street, affording greater facilities of access to the College. Grading, filling, guttering, and paving for the sidewalk along the east front of the College grounds, remain to be done. As there are no funds of the College applicable to this purpose, we respectfully suggest that it will be just and proper that the State bear the burden of this and a fair proportion of the expense of the asphalt road, an improvement which greatly enhances the value of the State property.

On January 6, 1871, the Board of Trustees, when fixing the general course of studies to be pursued in the College, determined to establish a Department of Geology, Mining, and Metallurgy. A Chair of Geology has been established, and the science is successfully taught in the

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*This is in addition to his army pay.

College by the aid of charts, diagrams, paintings, and the numerous valuable and unique specimens collected in the State Geological Survey, as well as from other sources, illustrative of general principles, and especially of the geology of Ohio.

In this State, whose wealth in the future is to depend so largely on the development and proper management of its great mineral resources, the necessity of a practical and thorough knowledge of mining and metallurgy is so obvious that it would hardly seem necessary to offer any argument on the subject. Fortunately for the great and increasing mining industries, with their wide-spread and related manufactures, they have received a just recognition and appreciation from Col. Nigh, who last winter introduced into the Legislature a bill to establish and endow a Department of Mining and Metallurgy in the Ohio Agricultural and Mechanical College, the Trustees of which have not, according to their original intention, introduced this important subject for the simple reason that the outfit required was beyond the means at their command for this purpose.

This bill remains over for consideration at the coming session, when, no doubt, it will receive a full and able exposition from its originator, and it is very much to be hoped it will become a law.

The necessity of moderate appropriations by the Legislature for the further and fuller equipment of the various departments of the College, the improvement of grounds, necessary repairs, and the erection of some indispensable out-buildings, and other structures, have been so fully stated in former reports that I will not repeat them here, but must again call attention to the fact that on July 2, 1862, the Congress of the United Stases passed and approved "An act donating lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts;" and on February 2, 1864, the General Assembly of the State of Ohio, after free discussion and full knowledge of all the provisions and conditions of said act of Congress, did enact as follows:

"SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That the assent of said State is hereby signified to the aforesaid act of Congress, and to all the conditions and provisions therein contained; and the faith of the State of Ohio is hereby pledged to the performance of all such conditions and provisions."

Could language be more explicit? How the faith of the great State of Ohio, thus solemnly pledged, has been kept, will appear when it is known that the State has not hitherto appropriated one dollar for the support and maintenance of the Ohio Agricultural and Mechanical College, an institution created by the State under the grant of Congress.

The third provision of the fifth section of the act of Congress says:

"Any State which may take and claim the benefit of the provisions of this act *shall provide*, within five years at least, not less than one college, as directed in the fourth section of this act, or the grant to such State shall cease, and said State shall be bound to pay the United States the amount received of any bonds previously sold, and that the title to purchase under the State shall be void."

Something more substantial and material than a mere legislative enactment was here demanded: grounds, buildings, libraries, apparatus. furniture, and conveniences for teaching were necessary for the existence of a college. What of all this has the State of Ohio provided? Nothing! Aside from the act of incorporation and the income derived from the Congressional grant, all the material aid that has made the Ohio Agricultuarl and Mechanical College an entity was the generous donation of the citizens of Columbus and Franklin county.

The fact that the State has thus been relieved of this heavy expense seems to the Trustees of the College to constitute another very strong and valid claim upon the Legislatuae for a due share of that care and bounty awarded to all the other State institutions. Let the Ohio Agricultural and Mechanical College receive this, and in spite of the prejudice and interested opposition that has been developed, it will eminently fulfill the purposes of its creation, and become a most efficient agent "to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

J. SULLIVANT,
Secretary of Board of Trustees.

NOVEMBER 26, 1876.

PROCEEDINGS OF BOARD OF TRUSTEES FOR 1876.

COLUMBUS, OHIO, *January* 5, 1876.

Owing to the non arrival of members, the meeting of the Board did not take place until 8 o'clock P.M., when all the members, to wit, Messrs. Leete, Noble, Larwill, Waddle, and Sullivant, being present, the President called the Board to order.

The evening was spent in an interchange of views and opinions on matters affecting the interests of the College, and at 10 o'clock P.M. adjourned to meet at 9 A.M. to-morrow.

COLUMBUS, *January* 6, 1876.

Board met, all the members present. Minutes of the July meeting read and approved.

The Board now proceeded to consider various matters and communications presented.

President Orton appeared and gave a brief account of the work and condition of the College since the former meeting, and suggested several things for the consideration of the Board, which now, at 12 o'clock M., adjourned to meet at the College at 2 o'clock P.M.

AFTERNOON SESSION.

Board met and passed the afternoon in the examination of various accounts and papers, the examination of college affairs generally, and at 5 o'clock P.M. adjourned to meet to-morrow at 9 o'clock A.M.

COLUMBUS, *January* 7, 1876.

Board met—all the members being present—and proceeded to business, and spent the forenoon in reading and examining the reports of the Secretary, Treasurer, President, and Professors, then before them, and at noon took a recess for dinner at the boarding-house.

AFTERNOON SESSION.

Board was called to order, when, in consequence of a previous discussion, Mr. Waddle offered the following, which was adopted:

Ordered, That the salary of Thomas Mathew be seventy-five dollars ($75) per month, from and after January 1, 1876.

Mr. Noble offered the following, which was adopted:

Resolved, That the Executive Committee of this Board be and it is hereby authorized to lease to any of the professors of the Ohio Agricultural and Mechanical College, and such other persons as shall desire such leases, each a lot of land fronting on High street, or any of the other streets surrounding the College grounds, not exceeding sixty feet wide, and extending back one hundred and eighty feet, upon which may be erected such buildings and out-buildings as are suitable for dwellings and residences, and to be used solely for residences and dwellings, for a term of not exceeding twenty years, at such annual rental as shall be agreed upon to be paid therefor; provided, that at the end of said lease it may be stipulated that the leases shall be extended for another period not exceeding twenty years more, at a fair rent for the use of the ground at the time of such extension; or the Board of Trustees may, at its discretion, pay the reasonable value of the buildings which may remain on the ground at the expiration of such first-mentioned lease, as the Board may, in its discretion, then elect and determine.

On motion of Mr. Sullivant, it was

Resolved, That the Legislature of Ohio is hereby respectfully requested to furnish a sufficient number of suitable arms and accoutrements for the use of the Ohio Agricultural and Mechanical College, so that military tactics may be properly taught, in accordance with the requirements of the acts establishing said College.

On motion of Mr. Sullivant, it was

Resolved, That the Secretary of this Board be and is hereby directed to make application to the proper department at Washington for the services of Lieutenant Luigi Lomia as Professor of Military Science in the Ohio Agricultural and Mechanical College, provided such services can be obtained without expense to said College.

On motion of Mr. Noble, it was

Resolved, That five hundred dollars ($500) be appropriated for the purpose of being expended in the purchase of such books of reference, and such other books as appear to be most needed as aids in furnishing the means of instruction in the College; and that the selections shall be made with a view to the aid of each of the College departments as nearly equal as may be, at the discretion of the Executive Committee, after due consultation with the Faculty.

The Board resumed the consideration and discussion of various bills and communications; whereupon the papers communicated by Mr. Aaron F. Perry were referred for adjudication and settlement to Mr. Leete, President of this Board; and the bills and claims of George Engelke were referred to Messrs. Noble, Larwill, and Waddle; and the report and papers of the Treasurer were committed for examination and report thereon to the Standing Committee on Finance and Accounts, to wit, Messrs Larwill and Waddle; and now, at 5 o'clock P.M., the Board adjourned to meet in the city to-morrow at 8 o'clock A.M.

COLUMBUS, *January* 8, 1876.

Board was called to order by the President, and proceeded to business.

Mr. Waddle offered the following report, which was accepted, and ordered to be put on record with our minutes:

[COPY.]

COLUMBUS, OHIO, *January* 8, 1876.

The committee to which was referred the account of H. S. Babbitt, Treasurer, have examined it and compared it with the vouchers, and find it correct.

(Signed) A. WADDLE,
WM. LARWILL.

On motion, it was

Ordered, That in consideration of the donation to the library of the College, by Mr. J. Sullivant, of the already published parts of the "Flora Braziliensis," the Board hereby agrees to continue the subscription of Wm. S. Sullivant to said work, and pay for the ensuing numbers as published, and in default thereof Joseph Sullivant shall be entitled to reclaim the work on payment of the sums advanced by the College for said work.

On motion, it was

Ordered, That the Secretary is hereby instructed to have the bath-room, with the pipes and pumps, put into efficient order, and the room properly warmed, if necessary, and that the students from the club-house shall have the privileges of the bath-room one day in each week, if desired.

On motion of Mr. Leete,

Ordered, That James M. Inskeep, John Adams, and —— Young, of Adams county, Ohio, be hereby appointed appraisers of the Virginia Military lands belonging to the College, and that they be notified of their appointment.

Mr. Larwill offered the following, which was adopted:

In consideration of the labor and responsibility attending the office of Treasurer, it is just and proper he should receive a reasonable compensation for his services; therefore,

Resolved, That the Treasurer of this Board be and is hereby allowed for his compensation an annual salary of four hundred dollars ($400), payable quarterly, and that his compensation commence from the date of his election.

The Board now proceeded to ballot for its officers for the ensuing year. Whereupon it was found that Mr. Ralph Leete, having received four votes for President, and Alexander Waddle one vote, Mr. Leete was declared to be duly elected as President of this Board.

In like manner Joseph Sullivant, having received four votes, and one vote being blank, he was declared elected to the office of Secretary of the Board; and so, also, Henry S. Babbitt, having received four votes, was declared to be duly elected to the office of Treasurer.

Messrs. Waddle and Larwill were appointed a standing committee on Finance and Accounts, and Messrs. Waddle, Larwill, and Sullivant, Executive Committee for the ensuing year.

The following bills were accepted by proper vote of the Board, and ordered to be paid, to wit:

William Copas, for surveying Virginia Military lands in 1873, the sum of $60.50; J. W. Eylar, $35 for advertising sale of College lands in Adams county in 1873; George Engelke, $66.77 for hoisting-dummy in boarding-house, and labor performed about the same; Kaiser & Son, the sum of $118.70 for painting at boarding-house; and to F. W. Armstrong, $30 for services.

The bill of George Gleason & Co., by George Engelke, for curtains and fixtures for boarding-house, was directed to be returned to Gleason, the Board refusing to pay the same, as not made by nor authorized by them.

The Board now took a recess to two o'clock P. M.

AFTERNOON SESSION.

The Board reassembled at two o'clock P. M., when it was

Ordered, That the sum of four hundred dollars ($400) be and is hereby appropriated from any money in the treasury arising from the sale of lands in the Virginia Military District to continue the reclamation, survey, and appraisal of lands belonging to the Ohio Agricultural and Mechanical College in said district, and that the money hereby appropriated be drawn from the treasury upon the requisition of the chairman of the committee on the lands of said district, and that all such moneys be charged to the commission account of W. H. Leete, agent for said lands.

WHEREAS, A bill having been introduced into the House of Representatives providing for an appropriation of the surplus canal lands, and also other waste lands of the State, to the use of the Ohio Agricultural and Mechanical College, in common with the Ohio and the Miami Universities, which lands are the same brought to the notice of the General Assembly by this Board; therefore,

Resolved, That the Hon. Alexander Waddle be requested to look after the interests of the Ohio Agricultural and Mechanical College in the premises, and that his necessary expenses be paid.

Board now adjourned to Monday, January 10, at nine o'clock A. M.

MONDAY, *January* 10, 1876.

Board met, and, after a session attending to miscellaneous business, adjourned to seven o'clock P.M.

EVENING SESSION.

Board met and held a session discussing matters concerning the general interests of the College, and adjourned to ten o'clock A.M. to-morrow.

TUESDAY, *January* 11, 1876.

Board met at ten o'clock A.M., all the members being present, and passed some time in examining the finances of the College; and, on motion of Mr. Waddle, it was

Ordered, That the sum of fifteen thousand dollars ($15,000) be and the same is hereby

appropriated from the endowment fund of the College, and the Secretary and Treasurer are directed to draw warrants for the same as needed.

It was also

Ordered, That the above sum be appropriated and distributed as follows:

For salaries	$10,500 00
For general expenses, for roads, grounds, farm, and running expenses of departments, gas-works, and heating apparatus	2,400 00
For library	500 00
For repairs	800 00
For apparatus and furniture	800 00
Total	$15,000 00

On motion of Mr. Waddle, it was

Ordered, That the communication of Erasmus Tucker, in relation to lots No. 26 in Adams county, and No. 48 in Scioto county, be referred to the Committee on Virginia Military Lands.

And now, at twelve o'clock M., the Board adjourned to meet in April, 1876.

COLUMBUS, OHIO, February 3, 1876.

A quorum of the Trustees of the Ohio Agricultural and Mechanical College, to wit, Messrs. Leete, Waddle, and Sullivant, met this day, and were called to order by the Chairman, and proceeded to buisness.

In relation to the appraisement of certain lands in the Virginia Military District of Ohio, and claimed as belonging to said Agricultural and Mechanical College, on motion duly put and carried, it was

Ordered, by the Board of Trustees of the Ohio Agricultural and Mechanical College, That Jacob Mace, Sylvester Higby, and —— Smith, of the county of Ross; Samuel Owens, O. E. Niles, and Marshall Anderson, of the county of Pickaway; J. Arnett, Robert Bond, and William H. Chandler, of the county of Madison, be and they are hereby appointed to appraise and make return of any and all lands in the said counties, respectively, of the Virginia Military District, belonging to said College, as required by the fourth section of a certain act of the General Assembly of the State of Ohio, entitled "An act accepting the act of the Congress of the United States, approved February 18, 1871, ceding to the State of Ohio certain lands in the Virginia Military District, and to provide for the disposal of the same, etc.," passed April 3, 1873. And in case either or any of the persons named in this order as appraisers shall fail or neglect to attend to the performance of the duties required of him or them, then in any such case the committee on said lands is required to fill such vacancy.

On motion of Mr. Sullivant, duly put and carried in the affirmative, it was

Ordered, That the sum of one hundred and twenty-five dollars ($125) be and is hereby appropriated for the purpose of connecting the College with the city and fire department thereof by a line of telegraph, the said sum to be expended under the direction of

Professor Mendenhall, he rendering to this Board an itemized bill of the expenses; and it is further

Ordered, That this appropriation of $125 be taken from the appropriation of $2,500 for various expenses, made January 8, 1876.

Ordered, That the further sum of three hundred dollars ($300) be and is hereby appropriated to continue the survey and reclamation of lands in the Virginia Military District, to be expended by W. H. Leete, under a former resolution of this Board, and that he render a full report of his transactions to the next meeting of this Board.

Board now adjourned *sine die*.

COLUMBUS, OHIO, *April* 5, 1876.

The Board of Trustees of the Ohio Agricultural and Mechanical College met in session this day, all the members being present, and being called to order proceeded to business.

The morning was spent in hearing and discussing the report of the Superintendent of the Farm, which was referred to Messrs. Waddle and Larwill.

The report, and papers relating to the Virginia Military lands was referred to Messrs. Noble and Waddle, and at one o'clock the Board adjourned to meet at the College.

O. A. AND M. COLLEGE, 3 P.M.

Board met, and passed the time in an interview with the President and Professors, discussing various matters connected with the College and the farm, and at half-past four P.M. adjourned to meet in the city to-morrow at 9 o'clock A M.

COLUMBUS, *April* 6, 1876.

Board met and was called to order, and proceeded to business. A communication, rocommending John Price as Farm Superintendent, was received, considered, and ordered to be placed on file.

The committee to whom was referred the report and vouchers of the Farm Superintendent reported that they had examined it, and finding it quite satisfactory, the report was adopted, and ordered to be recorded.

On motion of Mr. Noble, duly put and carried, it is

Ordered, That hereafter the coal for the students' rooms in the boarding and club houses shall be bought and paid for with the College coal, and re-sold to students at cost price.

The committee to whom was referred the papers and vouchers relating to the Virginia Military lands belonging to the College reported that, owing to the voluminous matters and accounts, they could not now make a full report, and they asked further time, which was granted.

Board now adjourned to 2 o'clock P.M.

AFTERNOON SESSION.

Board met, a quorum being present.

On motion, duly put and carried, it was

Ordered, That no charges be made against students for the use of water or gas consumed in the chemical laboratory.

Ordered, That the application of John Price to be Farm Superintendent be returned to him, on application, there being, at present, no intention by the Board of making any change.

Ordered, That the Secretary, to whom the charge of the grounds was committed by a former resolution of this Board, is hereby directed to make additional planting of trees, as far as the season and circumstances, and the former appropriation for improvement of the grounds, will permit.

Board now adjourned until to-morrow at 9 o'clock A.M.

COLUMBUS, *April* 7, 1876.

Board met, and a quorum being present, proceeded to business.

On motion, duly put and carried, it was

Ordered, That Professor Colvin be and he is hereby authorized to procure a suitable book or books, in which he is to tabulate and arrange, under suitable heads, all the expenditures of this Board from its organization, and that the books, papers, and vouchers in possession of the Secretary and the Treasurer of this Board be placed at his disposal for this purpose, and said Secretary and Treasurer are instructed to give such aid and explanation of books and papers as may be necessary; also, that said Colvin be requested to proceed with his work as speedily as possible, and present the result to this Board; and for his labor shall receive such compensation as the Board may deem reasonable and just.

On motion of Mr. Waddle, duly put and carried, it was

Ordered, That the sum of eight thousand dollars ($8,000) be appropriated from the income fund for the support and maintenance of the College, and the Secretary and Treasurer of this Board are hereby instructed to carry this order into effect.

On motion, the Board adjourned to Thursday, the 13th.

THURSDAY, *April* 13, 1876.

Board met at the College—present, Messrs. Leete, Waddle, Larwill, and Sullivant—and proceeded to examine and decide concerning several matters suggested for their consideration, and at five o'clock in the afternoon returned to the city.

EVENING SESSION.

Board met at 8 o'clock P.M., a quorum being present, and listened to a report and memorial prepared by Mr. Leete, and intended to be submitted to Congress, relating to certain waste and unappropriated lands, which are requested to be given to the State of Ohio for the sole use and benefit of the Ohio Agricultural and Mechanical College.

After a free discussion, the Board indorsed and adopted the able paper of Mr. Leete, which he had prepared with much care and labor, and for which he is accorded credit as an additional evidence of his zeal and diligence for the interests of this College.

On motion, the Board adjourned *sine die*.

COLUMBUS, OHIO, June 19, 1876.

Board met, pursuant to notice, at 3 o'clock P.M., all the members being present, and adjourned to meet forthwith at the College.

Board met at 4 o'clock P.M., and was called to order, and proceeded to inspect the different departments and hold an interview with the President and Professors.

On motion put and carried,

Ordered, That three hundred dollars is hereby appropriated to purchase a lathe for use in the physical laboratory; said sum to be expended by Prof. Mendenhall.

On motion, the Board adjourned to meet in the city to-morrow at 9 o,clock A.M.

JUNE 20, 1876.

Board met at 9 o'clock A.M., all the members present, and proceeded to business.

On motion of Mr. Larwill,

Ordered, That the amount of the judgment and costs in the case of Keiser against Cooper, Barton, and others, be paid out of the fund arising from sales of Virginia Military lands; the sum of said judgment and costs being $193.74.

Mr. Sullivant presented the resignation of Professor J. H. Wright, whereupon the following action was taken:

WHEREAS, Mr. John H. Wright, Assistant Professor in charge of the Department of Ancient Languages in this College from its organization, has tendered his resignation, with the design of prosecuting more extended classical studies in the University of Leipsic, Germany, it is hereby

Ordered, That the resignation of Professor Wright be accepted; and recognizing the ability and faithfulness with which he has discharged his responsible duties, we tender him the assurances of our esteem, and our best wishes for his success and future welfare.

Ordered, That a copy of this action of the Board be furnished to Professor Wright.

Ordered, That if Turner and Engelke desire a renewal of the lease of the boarding-house for another year, the Secretary is directed to renew said lease, adding this clause, to wit: "It is hereby further agreed that the President of the College shall have authority to fix the hour of meals at the boarding-house so as to conform to the wishes of a majority of the students boarding there."

After discussing various matters which required their attention, the Board agreed to spend the afternoon in attendance on the closing exercises

of the College, and listen to an address by Prof. Russell, Vice-President of Cornell University; and now adjourned until 9 o'clock A.M. to-morrow.

JUNE 21, 1876.

Board met at 9 o'clock A.M., all the members being present, and expressed their pleasure at the large attendance of citizens on yesterday, notwithstanding the rainy and threatening weather. Great interest was manifested by the audience, and much satisfaction expressed at the prosperous condition of the College. After the exercises the Trustees met Prof. Russell and many ladies and gentlemen at a sociable reception given by President Orton at his house.

The Board had an interview with Lieutenant Kilbourne in regard to his appointment to the position of Instructor of Military Science in the College; Lieut. K. being Chief Instructor in charge of the United States Signal Service at Fort Whipple.

At the request of the Board, President Orton also met them, and a general discussion of matters pertaining to the College consumed the remainder of the morning, and a recess was taken until half-past one o'clock P.M.

Board met at half-past one o'clock P.M., and after holding an interview with Professors Mendenhall and McFarland, proceeded with routine business; when it was

Ordered, That six hundred dollars be appropriated, to be expended under the direction of the Secretary, for book-case in the library, and for tables and cases in the geological room.

Ordered further, That one hundred and twenty-five dollars be placed at the disposal of Prof. Townshend, to be expended for the benefit of his department; and that fifty dollars be expended by Prof. Mathews in the purchase of models and materials for the Drawing department; and that one hundred dollars be placed at the disposal of the Faculty to defray the expense of examinations in various counties.

The Board directed the Secretary to have proper repairs of the buildings made during the vacation; and adjourned to 10 o'clock A.M. to-morrow.

JUNE 22, 1876.

Board met at 10 o'clock A.M., was called to order by the President, and spent the forenoon in examining and hearing explanations of papers presented by Wm. Leete respecting the Virginia Military lands belonging to the College, and took a recess until 2 o'clock P.M.

Board met at 2 o'clock P.M., and continued the examination of the papers relating to entries, surveys, appraisements, etc., of the Virginia Military lands, after which it was

Ordered, That the appraisement of lands returned by William Leete, in the counties of Adams, Pike, Scioto, and Pickaway, amounting to the sum of $27,465.05, be received, placed on file, and recorded.

On motion of Mr. Waddle, it was

Ordered, That the necessary current expenses in the searching out and reclaiming the Virginia Military lands be paid out of the fund derived from the sale thereof, and that Mr. Ralph Leete be authorized to pay such expenses out of any funds on hand arising from such sales, Mr. Leete rendering an account of such expenditures to this Board for approval.

After consultation as to the best means to secure proper service from the High Street Railroad to the College, the Board adjourned until to-morrow.

JUNE 23, 1876.

Board met, when, on motion, the following was adopted:

WHEREAS, The Columbus High Street Railroad being out of repair in several places, and an additional switch being needed in order to give proper facilities in the transportation of passengers, it is hereby

Ordered, That the Secretary of this Board be directed to notify the City Council of the repairs required, and the necessity for an additional switch; also, their attention be directed to the insufficient character of the brakes now in use at the tunnel on said road, with the request that the Council take action in the premises, as provided by the ordinance dated November 16, 1874.

Ordered, That the Committee on Virginia Military Lands be and is authorized to bring an action on the part of the Ohio Agricultural and Mechanical College against Samuel Kendrick, for his failure to comply with his contract with the College to furnish plats or field notes of the vacant or unappropriated lands of said College in the Virginia Military District, as required by the terms of his contract with the Trustees.

WHEREAS, On the 16th of November, 1874, the Columbus Street Railroad Company, with H. T. Chittenden and E. T. Mithoff as security, entered into an obligation to the Ohio Agricultural and Mechanical College, William Dennison, Robert E. Neal, and Gilbert G. Collins, in the penal sum of twenty thousand dollars, to construct a continuation of the High Street Railroad from the intersection of Goodale with High street through Goodale street and Neil avenue to the farm of said College, and to provide and run suitable passenger cars over and through said streets to and from said College grounds, at the times and in the manner provided by said ordinance and the contract between said Street Railroad Company and said College, William Dennison, Robert E. Neil, and Gilbert G. Collins; and

WHEREAS, Said Street Railroad Company has neglected and failed to comply with the requisitions of the city ordinance and the provisions of said agreement in the following important particulars: 1st. It has neglected and failed to provide sufficient clean and commodious cars and horses for the transportation of passengers to and from said College grounds. 2d. It has also failed to observe the running time of said cars, as the same has been designated from time to time by the President of the College, whereby the operations of the College have been much embarrassed during the past college year. It is therefore hereby

Ordered by the Board of Trustees of the Ohio Agricultural and Mechanical College, That the sum of three thousand dollars be and is hereby appropriated to provide three suitable street railroad cars, with necessary horses and equipments, to operate said railroad; and it is further

Ordered, That in case said Railroad Company shall not, on or before the 25th day of July next, provide and put upon said road such suitable cars, horses, and equipments as are mentioned in said contract, then that Joseph Sullivant, Esq., the managing agent of this Board, proceed to purchase three suitable cars, with necessary horses and equipments, and place the same upon said road, and cause the same to be operated as authorized and provided by said contract. It is further

Ordered, That a copy of the foregoing proceedings be certified to the President of said Street Railroad Company.

After which the Board adjourned *sine die*.

COLUMBUS, OHIO, July 26, 1876.

The Board of Trustees met this day at three o'clock P.M., on call of the President, and spent the afternoon on the College farm, in the examination and discussion of various matters connected therewith, and adjourned to meet in the city to-morrow at nine o'clock.

COLUMBUS, OHIO, July 27, 1876.

Board met and was called to order by the President, all the members being present.

After examination of testimonials of various candidates for the place of Assistant Professor of Ancient Languages in the College, and an interchange of views, it was

Ordered, That Joseph R. Smith, at present teacher of Ancient Languages in the Columbus High School, be and is hereby appointed Assistant Professor of Ancient Languages in the Ohio Agricultural and Mechanical College for the next ensuing school year, at a salary of fifteen hundred dollars, payable monthly.

Ordered, That the Board requires a full weekly statement of labor performed on the farm, showing the number of hours employed each day; the kind of labor performed, designating the number of the field on which such labor was performed; and that the Professor of Agriculture, who is *ex-officio* Farm Superintendent, see that this order is carried out. And

WHEREAS, This Board is impressed with the opinion that there has been unreasonable delay in planting, sowing, cultivating, and gathering the crops on the College farm; therefore it is further

Ordered, That hereafter the Professor of Agriculture and *ex-officio* Farm Superintendent be especially charged with the duty of seeing that all these things shall be done promptly and in good season.

The communication of Mr. Sam. Kendrick, of July 7th, was read and discussed, and the Board being of opinion that the matters therein belong to William Leete, rather than to them, the communication was directed to be laid on the table.

Ordered, That Professor McFarland be requested to make an examination and survey of the run passing through the College grounds, with a view to the shortening and improvement thereof, and that he make an estimate of the cost thereof, and such suggestions as his survey will enable him to make.

Ordered, That the Secretary, having charge of the College grounds, is hereby directed to have them mowed and put in order, cutting and removing all weeds, briars, sprouts, logs, trash, etc.

Ordered, That fifteen thousand dollars be and is hereby appropriated from the income fund for the maintenance of the College.

On motion, the Board adjourned *sine die*.

REPORT OF THE FARM SUPERINTENDENT.

To the Trustees of the Ohio Agricultural and Mechanical College:

GENTLEMEN: The following account of stock, implements, and crops, of farming operations, improvements and experiments, and of receipts and expenditures on the College Farm for the year ending March 31, 1876, is respectfully submitted:

INVENTORY OF STOCK.

4 draft-horses, valued at	$400 00
8 steers, three years old, valued at	400 00
12 steers, two years old, valued	480 00
2 cows, graded, valued at	100 00
3 heifers, two years old, valued at	105 00
3 yearlings, valued at	60 00
2 calves, valued at	10 00
5 breeding-sows, valued at	50 00
18 barrow-hogs, valued at	180 00
9 pigs, valued at	27 00
Total value of stock	$1,812 00

IMPLEMENTS AND TOOLS.

1 Champion Reaper and Mower	$150 00
1 Buckeye Reaper and Mower	150 00
1 grain drill	50 00
1 horse rake	25 00
4 plows	60 00
2 harrows	35 00
1 corn-planter for one horse	20 00
3 cultivators	40 00
2 wagons	200 00
1 buggy	50 00
1 sled	29 00
1 fanning-mill	20 00
4 sets of harness	60 00
1 horse-fork	5 00
1 cradle scythe	2 50
3 scythes	4 50
8 hay-forks	8 00
4 hay-rakes	1 00
4 manure-forks	4 00
8 shovels	10 00
8 spades	10 00
2 picks	3 00

2 mattocks	$3 00
2 crowbars	5 00
2 hammers	3 00
1 grindstone	3 00
1 beetle and wedges	3 00
1 cross-cut and 1 hand-saw	5 00
1 corn-sheller	6 00
6 hoes	4 00
1 ax	1 50
2 log-chains	6 00
12 corn-cutters	6 00
4 measures and baskets	3 00
2 hay-knives	3 00
1 shovel-plow	5 00
3 tools for draining	5 00
Total value of implements and tools	$994 50

CROPS UNSOLD.

Corn, 1,000 bushels, at 50c	$500 00
Wheat, 363 bushels, at $1	363 00
Hay, 40 tons, at $12	480 00
Total value of crops unsold	$1,343 00

FARM CROPS.

During the year there were grown upon the College farm forty acres of corn, thirty-two acres of wheat, seventeen acres of oats, and fifty-seven acres of hay.

Corn.—Of the corn, thirty-four acres were grown upon the river bottoms, in the south-west part of the farm. A part of this field was subject to overflow from the Whetstone River, and a part was marshy.

Six acres of corn were planted in the north-east part of the farm, portions of which were overflowed several times, the result, mainly, of changes in the water-courses and grades consequent upon the improvement of High street.

The work done upon the corn crop cost as follows:

Plowing, thirty-four days, at $3 per day		$102 00
Harrowing, four days, at $3 per day		12 00
Marking, planting, and seed		20 00
Cultivating, fifty-one days, horse and man		102 00
Cutting and husking		151 00
		$387 00

Product and Value.

1,975 bushels, at 45c	$888 75	
Deduct cost	387 00	
Leaving to credit of corn crop		$501 75

Of the corn raised, 1,000 bushels remain on hand, as above stated; the difference has been used for feeding the stock upon the farm.

Wheat.—Thirty-two acres of wheat were sown on second bottom land, somewhat worn. Timothy was sown with the wheat, and grain and grass grew well until harvest time. When the wheat was ready to cut the extremely wet weather made the harvest tedious and expensive. After it was cut, the wheat was properly shocked and capped, but much of it was blown down in a severe rain-storm, and subsequently required to be unbound before it could be again dried. A portion of this crop was in the field more than three weeks after cutting, and was finally secured in a damaged condition.

The cost of this crop was as follows:

Plowing, twenty days, at $3 per day	$60 00
Harrowing, four days, at three dollars per day	12 00
Drilling, four days, at $3 per day	12 00
Seed, 40 bushels, at $1.15 per bushel	46 00
Harvesting	72 00
Threshing	36 30
Total cost of wheat crop	$238 30

Product and Value.

363 bushels, at $1 per bushel	$363 00	
Deduct cost	238 30	
Leaving to credit of wheat crop		$124 70

Oats.—Seventeen acres of oats were sown, and until nearly harvest time appeared unusually promising. When almost ripe a severe storm of wind and rain leveled the crop with the ground, and soon after the army-worm invaded the field in such numbers that by the time the oats should have been cut scarcely a grain was to be found upon the straw. The unripe oats, the straw, and millions upon millions of drowned worms decayed together.

The expense attending this operation was:

Plowing, twelve days, at $3 per day	$36 00
Harrowing, two days, at $3 per day	6 00
Drilling, two days, at $3 per day	6 00
Seed	38 10
Total cost of oat crop	$86 10

Hay.—The cutting of hay was delayed some time in the hope of having suitable weather. Fifty-seven acres were cut, and seventy-five tons of hay were secured in fair order.

The expense and value of this crop were as follows:

Cost of cutting		$26 00
Work in turning, hauling, etc		158 00
		$184 00
Value of seventy-five tons, at $12 per ton	$900 00	
Deduct cost	184 00	
Leaving to credit of hay crop		$716 00

Cattle.—Nine head of fat cattle were sold from the pasture. Six of these had been bought a year before at a cost of $50 each. They were kept in good order through the winter, and sold for an average price of $90 in the following August. The others, which had been longer on the farm, sold for $90, $126, and $78 respectively. The aggregate sum received for the nine head was $835.50.

Swine.—Thirty-two hogs have been fattened, and sold for the aggregate amount of $733.38. The bill for the last eight of these was $190.52, of which $100 has been received on account, as shown in the detailed statement of receipts. Fourteen pigs were also sold for the additional sum of $42.50.

Results of Farm Work.—The statements above given of the cost and value of the principal farm products have been made with considerable care, in order to show the results of the farm operation in some of its largest undertakings.

It is hoped that these comparisons will supply, at least in some measure, the omission of a regular balance-sheet, such as would give the results of the farm business from year to year, and such as every good farmer should make annually.

On the College farm and grounds much work has been done during the year, and much yet remains to be done, which may be properly considered as part of the construction work of the College; and this work is necessarily so intermingled with what may be called the farm work proper, that no ordinary amount of care and attention will suffice to discriminate between them. Both kinds of work are being done continually, as opportunity serves, by the regular farm laborers and the College students, and are paid for together in the aggregate by monthly wages or the students' pay-roll. These labors can not be prosecuted separately without disadvantage, and hence, for the present at least, no balance-sheet of purely farm operations and results can be made that would be strictly accurate, and any other would be unjust and delusive.

Farm Improvements.—In the south-west part of the farm was a swamp of about six acres, where the vegetable matter had a depth of from three to six feet. This was too wet for tillage, and very dangerous for stock;

and only by efficient drainage could it be made of any value. A tile drain was laid along the foot of the bank from which the springs issued, and between it and the swamp; and the discharged water from the tile drain carried off, partly by a covered drain and partly by an open ditch, to the Whetstone River. The effect of this single drain has been to render a large portion of the swamp sound and dry; though the six-inch tile used was scarcely sufficient to carry off the abundant springs in a wet season like the last. This year, before corn-planting, some additional work will be done which seems necessary to complete success. The expense incurred in this improvement was fifteen dollars for tile and twenty-one dollars for labor.

A fence has been made near the house occupied by Mr. Dix, at an expense of twenty-two dollars for material and fourteen dollars and forty-three cents for labor.

The corn-crib has been removed from the north part of the farm, and placed at a convenient point near the large barn. This change was greatly needed, and was secured at an expense for labor of twenty-three dollars.

At the barn it became necessary to have water more convenient for horses and other stock. A well was accordingly dug to the depth of eleven feet through the gravel, and an abundance of excellent water obtained. The total cost of well, pump, and drinking-trough for stock is twenty-one dollars and fifty cents.

The locust sprouts grown from stumps in the east lot have been grubbed, and such shoots as could be obtained with roots have been replanted on the river bank and in other advantageous places.

A hog-pen has been built from old material, at an expense of fourteen dollars for labor and nails.

EXPERIMENTS.

It will be remembered that the year 1875 was exceptionally unfavorable for all farm operations. Early in June a period of continued and heavy rains commenced, which lasted during the whole harvesting season, and the saving of crops was only effected with difficulty and great labor, under the most adverse circumstances. A few experiments were, however, attempted upon the farm.

1. One to determine the relative value of heavy and light seeding of wheat, and what quantity of seed to the acre would, under particular and similar conditions, give the best results.

It is already well understood that less seed is required where sowing is early and ample time is given for the roots to stool and thicken. It is

also understood that less seed is required upon good land than upon poor, because on good land the crop thickens more.

At different dates, from the 10th of September to the 10th of October, three fields of wheat were sown by drill, with different amounts of seed, from three to six pecks to the acre. The wetness of the season made it impossible to obtain results sufficiently accurate for reliable comparison. Fortunately this test involved no expense.

2. The oat-field of seventeen acres was sown so as to determine which of four different varieties would prove most productive. The army-worm destroyed all kinds equally; and the wet weather gave us no opportunity to effect the destruction of the worm.

3. In the corn-field of six acres ten rows were planted without manure, and the next ten manured in the hill with a small quantity of the artificial fertilizer prepared and sold by the Dryer Company, Cleveland; and so alternately in rows of ten, manured and not manured, throughout the field. A quantity of this fertilizer was generously furnished to the College by the Dryer Company for the purpose. The season proved as unpropitious for this experiment as for the others. Large portions of the field were repeatedly under water, and the comparison of small areas, after the crop was ripe, led to no satisfactory conclusions. One noticeable effect of the fertilizer may, however, be mentioned. When the corn came up, the manured rows grew much more rapidly than the unmanured, and soon reached twice the height; and this difference was maintained until the excess of moisture injured the whole crop alike.

THE COLLEGE GROUNDS.

The following work has been done upon the College grounds. The end of Neil Avenue, so far as the College lands extend southward, has been well graveled; also the coal-road west and north of the College building. Paths from the house occupied by President Orton to the College, and along the greater part of Woodward Avenue, have been made and graveled. Grading has been done about the club-house. The main road in front of the College was several times thoroughly cleaned and repaired, and trees and shrubs were planted on the lawn, and about the College and boarding-hall.

The total expense of graveling and grading during the season has been one hundred and fifty-six dollars and fifty-two cents.

WORK AND EXPERIMENTS FOR 1876.

In the coming season the experiment of thick and thin seeding of wheat will be repeated.

Professor Beale, of the Michigan Agricultural College, has packed and marked two hundred and forty variety of seedling potatoes, which he presents, to be tested in this soil and climate. They will be carefully planted and tilled, and the results noted.

An effort will also be made to determine the value of top-dressings of manure and plaster upon meadow-land; some of the meadows of the College farm being very suitable for such a comparison.

On a portion of the corn ground it is proposed to compare the results of subsoiling and ordinary plowing. For 1876 it is proposed to cultivate the following: Corn in the south-west field, No. 14, where the draining is being perfected; also on the flat near the river where the sod was broken up this spring on account of the poor quality of the grass and the abundance of weeds; also in the north-east field, No. 4, where corn grew last year, if the road work on High street should be carried forward so as to make it possible to keep the water from repeating the damage of last year.

The field north of the College it is proposed to sow with oats again, and afterward with wheat and timothy.

Nos. 1, 2, and 13 will be pasture, and Nos. 7 and 9 meadow. Wheat is growing upon No. 8, the field of 17½ acres near the boarding-hall.

IMPROVEMENTS PROPOSED.

The following improvements are immediately required:

1. A two-board fence on the west side of No. 9, by the cut-off, so that cattle may be kept upon the island. This will involve an expense of about twenty dollars—ten dollars for lumber and as much for labor.

2. The run that leaves the large corn-field and comes northward to find the river, must have a cut through the short neck that diverts it from a straight course. This work, which will require teams and men for three or four days, at a probable cost of twenty dollars, will protect the corn-field from further damage by the river.

3. There is a need of work on the road leading northward from the boarding-hall; a pond or depression needs filling, and the fence should be placed at the foot of the bank instead of upon the top.

RECEIPTS AND DISBURSEMENTS.

Receipts.

The receipts from the College farm to March 31, 1876, were as follows. (An itemized statement of the sources of these receipts will be appended to this report.)

January, 1875	$118 71
February, "	367 42

March, 1875	$235 90
April, "	258 67
May, "	127 50
June, "	116 80
July, "	37 45
August, "	663 80
September, "	13 30
October, "	53 92
November, "	43 25
December, "	120 75
January, 1876	68 44
February, "	252 05
March, "	55 31
Received from Treasurer	700 00
From all sources	$3,233 27

Disbursements.

The expenses and bills paid to March 31, 1876, were as follows:

Voucher No.	1.	F. D. Prouty, seeds, plow, etc	$76 65
"	2.	M. D. Lakin, threshing	18 15
"	3.	T. Grim, carpenter work	68 80
"	4.	John L. Gill, plow-shares, etc	10 80
"	5.	McCune, Mithoff & Co., hardware (1874)	158 55
"	6.	Ohio Farmer, advertising	39 00
"	7.	John Conrad, graveling road	118 25
"	8.	Isaac Reynolds, "	28 27
"	9.	S. A. Buchanan, painting	3 51
"	10.	Students' pay-roll to June 25, 1875	122 41
"	11.	S. A. Buchanan, labor, harvesting	14 00
"	12.	" "	40 50
"	13.	Wright & Bett, labor	14 25
"	14.	F. D. Prouty, plow repairs	7 30
"	15.	Kilbourne, Jones & Co., hardware	3 85
"	16.	Stair & Co., seed oats	38 10
"	17.	Columbus Sewer Pipe Co., drain-tile (of which $15 was for farm)	99 55
"	18.	Freight bills	3 64
"	19.	Hershiser & Adams, lumber (for Mr. Harding's house, except $15.20 for fencing)	82 04
"	20.	Charles Orton, labor	83 53
"	21.	S. A. Buchanan, painting	9 00
"	22.	John Conrad, team work	119 12
"	23.	Charles Orton, labor	25 12
"	24.	N. Baumgartner, labor	255 80
"	25.	" "	121 37
"	26.	M. Thomas, labor	305 00
"	27.	James Dix, labor	420 00
"	28.	George Dix, labor	32 25

Voucher No.	29.	Fred. Moehrman, labor	$122 00
"	30.	George Dix, labor	82 00
"	31.	Wm. Burdell, harness, whip, and blanket	24 30
"	32.	Students' pay-roll to December, 1875	277 57
"	33.	Cash paid for sundries	23 70
"	34.	McCune, Lonnis & Stoner, hardware	14 36
"	35.	Diemer & Smith, plow repairs	1 80
"	36.	N. Baumgartner, labor	58 12
"	37.	James Dix, labor	105 00
"	38.	Morgan Thomas, labor	37 50
"	39.	F. Moehrman, labor	106 00
"	40.	Students' pay-roll to March 31, 1876	28 84
			$3,200 01
From this amount is to be deducted the "Ohio Farmer" bill for advertising, received from Mr. Sullivant, voucher No. 6			39 00
Net total of disbursements			$3,161 01
Balance cash in hand			72 26
			$3,233 27

(Signed.) N. S. TOWNSHEND, *Superintendent.*

COLUMBUS, OHIO, April 1, 1876.

The following is a detailed statement of the receipts from the sale of farm produce and other sources, collectively stated in the foregoing account:

1875.			
Jan.	5.	For corn fodder	$1 80
	15.	" "	3 00
	16.	" "	10 00
	22.	" "	5 00
	23.	" "	70
	30.	" "	5 00
	30.	From Geo. Sendal, for 4 hogs, weight 1,434 pounds, at 6½ cents	93 21
		Total receipts in January, 1875	$118 71
Feb.	12.	From George Sendal, for 8 hogs, weight 2,938 pounds, at 6½ c	190 97
	19.	From Dr. Babbitt, 3,500 pounds of hay, at $20 per ton	35 00
	24.	From Mr. Born, for 65 bushels of barley, at $1.05	68 45
		From George Sendal, for 1 steer, 2,100 pounds, at 6c., $126; received on account	50 00
	1, 6.	From Mr. Dix, for bull service	2 00
	6.	for corn fodder	5 00
	7.	for 2 bushels of wheat	2 00
	17.	for 200 pounds of hay	2 00
	23.	for 500 " "	5 00
	26.	for 600 " "	6 00
	27.	for 100 " "	1 00
		Total receipts in February, 1875	$367 42

March	1.	From E. Babbitt, for 15½ weeks' pasture for steer	$7 75
	2.	For hay sold	23 00
	30.	From Mr. Dix, for hay sold at barn	144 95
	3.	For hay	8 00
		For hay to Mr. Dietchley, 1 ton	20 00
	4.	Cash for hay	9 00
		For 720 pounds of hay	7 20
	5.	For hay	2 00
	6.	"	5 00
	9.	"	9 00
		Total receipts in March, 1875	$235 90
April	1.	From Mr. Fisher, for hay	5 00
	30.	For hay sold at barn	205 00
		From Mr. Menzler, for 2 hogs, 870 pounds, at 5½c.	48 67
		Total receipts in April, 1875	$258 67
May	1.	For 1½ tons hay, at $16	24 00
	3.	For hay	3 00
	4.	" $8.50; bull, $1	9 50
	5.	" $2; 6th, hay, $6; 7th, hay, $9	17 00
	8.	For bull, $1; 10th, hay, $15	16 00
	11.	For hay, $5.50; milk, $5	10 50
	13.	" $8; 15th, hay, $2	10 00
	17.	For bull, $1; 20th, hay, $3; 21st, hay, $6.50	10 50
	22.	For hay, $3; 26th, hay, $1.50; 27th, hay, $9.50	14 00
	27.	For bull, $1; 28th, hay, $12	13 00
		Total receipts in May, 1875	$127 50
June	12.	From George Sendal, on account	10 00
	30.	From balance due from same, for steer sold February 24	66 00
	19.	For bull	1 00
	29.	From J. Conrad, 1, 200 pounds hay, cut on lawn	5 00
	1.	From Mr. Dix, for milk, $6; 5th, hay, $3	9 00
	7.	Bull, $1; 10th, corn, 25 cents, hay, $1.50	2 75
	13.	Bull, $1; 15th, hay, $2; 16th, bull, $1; 19th, hay, $1.50	5 50
	22.	For cattle impounded, $4; 24th, for same, $1.50	5 50
	28.	For 2 pigs, $5; 30th, bull, $1; hay, $3.75	9 75
	30.	For 2 bushels wheat	2 30
		Total receipts in June, 1875	$116 80
July	9.	For hogs sold, 490 pounds, at 5c.	24 50
		Cash for milk, $4.25; 26th, hay, $1.40	5 65
	27–31.	Bull, $5; 31st, 2 bushels wheat, $2.30	7 30
		Total receipts in July, 1875	$37 45
Aug.	2.	Hay, $4.50; 4th, 2 pigs, $6; 6th, milk, $4	14 50
	14.	2 pigs, $6.50; 16th, $6; bull, $3	15 50
	25.	2 bushels wheat	2 50
		From Mr. E. Robinson, 7 steers, 7,614 pounds, at 6½c.	631 50
		Total receipts in August, 1875	$663 80

Sept.	15.	For bull, $3; 30th, milk, $8	$11 00
	30.	For 2 bushels wheat	2 30
		Total receipts in September, 1875	$13 30
Oct.	1–29.	For bull, $5; 30th, milk, $5	10 00
		For 29¼ bushels of wheat, at $1.15	33 92
	30.	For 3 pigs, to F. Moehrman	10 00
		Total receipts in October, 1875	$53 92
Nov.	1.	For C. S. Griffing, for pasturing horses	10 00
	6.	For bull, $1; 8th, 3 pigs, $9; hay, $1.25	11 25
	10–23.	For bull	4 00
	23.	From Dr. Cadwallader, for 3 tons inferior hay	18 00
		Total receipts in November, 1875	$43 25
Dec.	2.	For buckwheat, $14.40; 3d, 1 ton hay, $8	22 40
	6.	For bull, $1; vinegar, $2.75	3 75
		For hog sold, 342 pounds, at 7c	23 95
	14.	For hay and corn sold to President Orton	35 50
		For hay sold to George Williams	16 25
		For hay sold to Mr. Dix	18 90
		Total receipts in December, 1875	$120 75
1876.			
Jan.	1.	For bull, $1; 11th, light wheat, to Martin, 50 cents	1 50
	16.	For bull, $3; 17th, pasture of Rittersperger's colt, $6.50	9 50
	22.	From George Sendal, on account of hogs sold	50 00
	31.	Milk sold by Mr. Dix	7 44
		Total receipts in January, 1876	$68 44
Feb.	1.	For stock service, $4.50; 8th, 1 bushel corn to Martin, 50 cents	5 00
	14.	Bull sold to Mr. Pegg	78 00
	17.	4 hogs sold by Mr. Dix, 1,436 pounds, at 7c	100 50
	20.	Pasture for Dr. Gay's colt	12 00
	21.	Part payment of hogs sold Sendal	50 00
	24.	1 bushel corn to Martin	50
	29.	Hog sold	6 05
		Total receipts in February, 1876	$252 05
March	4.	For hay, $3.90; 13th, hay, $1.55; 23d, hay, $7	12 45
	25.	For hay, $3; 30th, milk sold by Mr. Dix, $7.20	10 20
	31.	For stock, 50 cents; 2 hogs, 536 pounds, at 6c., $32.16	32 66
		Total receipts in March, 1876	$55 31

TREASURER'S REPORT.

COLUMBUS, OHIO, November 16, 1876.

HON. RALPH LEETE,

Chairman of the Board of Trustees of the O. A. and M. College:

SIR: I have the honor to present herewith the sixth annual report of the financial transactions of the College for the fiscal year ending on the 15th inst. The report contains the same classified statements that have been made in the several preceding reports, to wit:

I. A general statement of cash accounts, showing the receipts, disbursements, and cash balance on hand November 15, 1876.

II. A statement showing the condition of the several appropriations made by the Board of Trustees, the payments made from each during the year, and the balances subject to draft this day.

III. A statement showing the drafts made upon the Endowment Fund invested in the faith of the State, and its present condition.

IV. A detailed statement of cash received from all sources during the year.

V. A detailed statement of orders paid.

VIRGINIA MILITARY LAND SALES.

The income from sale of the Virginia Military lands during the past year was		$3,870 35
Of this there was received for sales	$1,200 00	
For notes given for land sold	2,426 09	
For interest upon notes	244 26	
		$3,870 35

The outstanding bills receivable, taken for lands sold, in my hands, sent out for collection and in suit, amounted, November 15, 1875, to	$17,524 33
There were no new notes received by me during the past year, and I collected of the principal of former notes on hand, as above	2,426 09
Leaving notes receivable, outstanding to-day, for	$15,098 24

The cash receipts from all sources during the year just closed, including a balance of $1,208.48 on hand November 15, 1875, were	$40,538 83
The disbursements for all purposes during the same period amount to	38,517 30
Leaving a balance of cash in my hands amounting to	$2,021 53

I am unable to present estimates for the ensuing year farther than to say that the salaries and ordinary current expenses of supporting and maintaining the College will absorb the definite resources. The income

from the Virginia Military lands is irregular, and not to be relied upon. It will, therefore, devolve upon the Board, at its annual meeting in January, to take measures for providing the sure "way and means" to meet the authorized expenses. If they can not be supplied by specific appropriation by the General Assembly from State funds, it might not be improper to solicit authority to use so much of the accumulations of the Endowment Fund as may be found necessary, but not to reduce it below five hundred thousand dollars, including the special deposit with the Treasurer of State of the Agricultural College Bonds of Franklin county, amounting to thirty-four thousand five hundred dollars. Such use will not trespass upon the Land Scrip Fund of the General Government, or the accumulations thereto. I trust, however, that the State will, in some liberal manner, foster and aid the institution, and that the Trustees will promptly make the tuition as absolutely free as the public schools throughout the Commonwealth are.

I am, sir, very respectfully, yours,

HENRY S. BABBITT, *Treasurer.*

STATEMENT I.

A GENERAL STATEMENT OF CASH ACCOUNTS FOR THE FISCAL YEAR ENDING NOVEMBER 15, 1876.

HENRY S. BABBITT, *Treasurer,*
In account with the Ohio Agricultural and Mechanical College.

DR.

1875—Nov. 15.	To balance of cash on hand			$1,208 48
	To cash from various sources, as follows:			
	From Treasurer of State, on account of the income of the Endowment Fund, being balance remaining from requisition for $10,000, made November 2, 1875		$8,000 00	
	Proceeds of requisition, made January 31, 1876, for		15,000 00	
	Proceeds of requisition, made August 29, 1876, for		5,000 00	
	Proceeds of requisition, made October 23, 1876, for		5,000 00	
	Total		$33,000 00	
	From students' term bills—			
	Winter term of 1875-6	$543 09		
	Spring term of 1876	522 00		
	Fall term of 1876	616 00		
			1,681 00	
	From rent of houses—			
	President Orton, to November 1	$350 00		
	Prof. Mendenhall, to July 1, $387.50, less allowed for improvements, $300	87 50		
			437 50	
	From interest on bank account (showing an average monthly balance of less than $600)		25 25	
	From proceeds of Virginia Military land sales and interest thereon		3,870 35	
	From subscriptions to location of College		301 72	
	From chemicals, etc., sold by Professors		14 53	
	Total receipts during the year			39,330 35
	Total receipts, including balance			$40,538 83

CONTRA, CR.

1876—Nov. 15.	By disbursements as follows, and as per accounts in detail, with vouchers:			
	For salaries	$26,869 89		
	For expenses of Trustees	425 08		
	For current expenses	2,850 86		
	For telegraph line	125 00		
			$30,270 83	
	For farm improvements, grading, fencing, etc		1,690 37	
	For account of boarding-hall (buildings)		511 34	
	For account of main building		2,187 23	
	For furniture and apparatus		1,464 27	
	For library		488 55	
	For expenses of Virginia Military lands, surveys, etc		735 00	
	For purchase of lathe		265 00	
	For insurance (on $32,200)		322 00	
	For repairs		582 71	
	Total disbursements for the year			$38,517 30
	Leaving cash on hand (as per bank account)			$2,021 53

STATEMENT II.—APPROPRIATIONS.

A STATEMENT SHOWING THE BALANCES OF THE SEVERAL APPROPRIATIONS AT THE BEGINNING OF THE FISCAL YEAR 1876, THE AMOUNTS APPROPRIATED, THE SUMS EXPENDED FROM EACH DURING THE YEAR, AND THE BALANCES SUBJECT TO DRAFT AT THE END OF THE YEAR, NOVEMBER 15, 1876.

For what purpose appropriated.	Balance unexpended Nov. 15, 1875.	Appropriat'ns made during fiscal year 1876.	Amounts subject to draft in 1876.	Amounts expended.	Balance subject to draft Nov. 15, 1876.
Current expenses, being for support and maintenance of College, including salaries, expenses of Trustees, expenses of departments, care of farm, road, grounds, and buildings	$6,130 12	[c]$35,900 00	$42,030 12	[e]$30,270 83	$11,759 29
Farm improvement, grading, fencing, preparing botanic garden, etc.	[a]1,807 24	.....	1,807 24	1,690 37	116 87
Boarding-hall	998 31	.....	998 31	511 34	486 97
Main College building and grounds	9,001 12	.....	9,001 12	2,187 23	6,813 89
Furniture and apparatus	[b]2,685 23	[d]1,575 00	4,260 23	1,464 27	2,795 96
Mess-hall or club-house	508 18	.....	508 18	.....	508 18
Expenses of committee to Washington	500 00	.....	500 00	.....	500 00
Library	.....	1,000 00	1,000 00	488 55	511 45
Expenses of Virginia military lands, survey, etc	.....	735 00	735 00	735 00	.....
Purchase of lathe and tools	.....	300 00	300 00	265 00	35 00
Insurance	.....	322 00	322 00	322 00	.....
Repairs	.....	800 00	800 00	582 71	217 29
Purchase of cars and horses to operate street railroad, if necessary	.....	3,000 00	3,000 00	.....	3,000 00
Totals	$21,630 20	$43,632 00	$65,262 20	$38,517 30	$26,744 90

[a] Including old appropriation of $20, to pay Mr. Haerlin for plans.

[b] Including $11.96, balance of appropriation for Department of Languages.

[c] Appropriations made January 10, for salaries, $10,500; for general expenses, $2,400; April 8, for general expenses, $8,000; and June 26, for salaries, $15,000.

[d] Appropriations made January 10, $800; June 21, for cases and tables, $600; for Agricultural Department, $125; and for Drawing Department, $50.

[e] Expended for current expenses, $2,850.86; for expenses of Trustees, $425.08; for telegraph line, $125; and for salaries of Faculty and officers, $26,869.89.

STATEMENT III.

SHOWING THE AMOUNT OF THE OHIO AGRICULTURAL AND MECHANICAL COLLEGE FUND, COMPUTED UNDER PROVISIONS OF THE ACT PASSED FEBRUARY 10, 1870. (67 O. L., page 15.)

Amount of fund as principal, January 1, 1876						$495,774 48
Add interest on same for six months to July 1, 1876					$14,873 23	
Add interest on $34,500 of Franklin county bonds, due March 15, 1876, at 7 per cent. per annum					1,207 50	
Add interest on same to July 1, at six per cent					21 13	
Total additions for first six months					$16,101 86	
Deduct payments made by Treasurer of State, from income of endowment fund, since last report:						
Nov. 30, 1875.	$1,000, and interest to July 1, 1876			$35 17		
Dec. 10, 1875.	2,000,	"	"	67 00		
18, 1875.	1,000,	"	"	32 16		
20, 1875.	1,000,	"	"	31 83		
Jan. 8, 1876.	1,000,	"	"	29 00		
31, 1876.	1,000,	"	"	25 17		
Feb. 26, 1876.	1,000,	"	"	20 83		
March 3, 1876.	1,000,	"	"	19 83		
31, 1876.	1,000,	"	"	15 17		
April 6, 1876.	1,000,	"	"	14 17		
13, 1876.	1,000,	"	"	13 00		
29, 1876.	2,000,	"	"	20 67		
May 27, 1876.	3,000,	"	"	16 50		
June 19, 1876.	6,000,	"	"	11 00		
	$23,000			$351 50		
Total deductions first six months					23,351 50	
Net deductions from principal						$7,249 64
Leaving amount of new principal July 1, 1876						$488,524 84
Add interest on same six months to January 1, 1877					$14,655 75	
Add interest on Franklin county bonds as above					1,228 63	
*Add to this an amount charged in the interest statement November 15, 1874, which was also, by inadvertence, included in the amounts charged in 1875					5,000 00	
Interest on same two years, semi-annually					627 50	
Total additions					$21,511 88	
From this deduct the following amount paid by Treasurer of State, to wit:						
Aug. 26, 1876.	$1,000, with interest to January 1, 1877			$21 17		
Sept. 13, 1876.	1,000,	"	"	18 16		
Oct. 7, 1876.	3,000,	"	"	40 00		
23, 1876.	3,000,	"	"	34 50		
Nov. 13, 1876.	2,000,	"	"	16 00		
Total				$10,129 83		
*Deduct also an amount omitted to be charged in the interest statement, drawn December 29, 1871					500 00	
And interest on same, compounded semi-annually, for five years					171 95	
Total deductions					$10,801 78	
Net additions last six months						$10,710 10
Leaving amount of principal, derived from proceeds of sale of land scrip and accumulations thereto, to January 1, 1877						499,234 94

* Those omissions were not made in the accounts of cash received and paid; those accounts were accurately stated each year.

Upon this sum interest at the rate of six per cent. per annum, compounded semi-annually, is payable, under the laws of Ohio, to the Treasurer of the College. Besides this, a deposit was made in the State Treasury by the Trustees of the College, in compliance with the provisions of an act passed January 20, 1871, of the seven per cent. coupon bonds of Franklin county, amounting to the sum of		$34,500 00
Making an aggregate fund held for income by the State in trust for the College of		$533,734 94
The interest upon the above sums, computed upon the same terms for 1877, will amount to	$32,411 75	
Warrants were paid during the fiscal year 1876 amounting to		33,000 00
Being upon balance of requisition for $10,000, made November 2, 1875, amounting to	8,000 00	
And upon three requisitions made during the current year, amounting to	25,000 00	
		33,000 00

AUDITOR OF STATE'S OFFICE,
Columbus, Ohio, November 20, 1876.

I hereby certify the foregoing statement of the condition of the Ohio Agricultural and Mechanical College Fund to be correctly taken from the books of this office.

JAS. WILLIAMS, *Auditor of State.*
By HENRY S. BABBITT, *Chief Clerk.*

STATEMENT IV.

A STATEMENT IN DETAIL OF CASH RECEIVED FROM ALL SOURCES DURING THE FISCAL YEAR ENDING NOVEMBER 15, 1876, BY HENRY S. BABBITT, TREASURER OF OHIO AGRICULTURAL AND MECHANICAL COLLEGE.

Date.	From whom received and on what account.	Amount.
1875.		
Nov. 15	Balance of cash on hand	$1,208 48
18	J. G. Freeman, on note	57 85
23	J. Downey, on note, $60.00; interest, $3.45	63 45
	J. W. Smith, on note	25 00
30	Treasurer of State, income of Endowment Fund	1,000 00
	J. Lafferty, on note, $10.41; interest, $0.38	10 79
	S. and G. W. Nace, on note, $110.41; interest, $6.37	116 78
Dec. 2	F. N. Beebe, on note, $300.00; interest, $4.00	304 00
10	Treasurer of State, income of Endowment Fund	2,000 00
	C. J. Thompson, on note, $43.72; interest, $5.88	49 60
	John Williams, on note, $35.84; interest, $13.16	49 00
15	A. Behren, Jr., on note, $123.73; interest, $14.27	138 00
18	Treasurer of State, income of Endowment Fund	1,000 00
20	same " " "	1,000 00
23	Wallis and Donaldson, on note, $10.64; interest, $3.26	13 90
27	J. W. Smith, on note	10 00
	W. Liston, on note, $50.00; less exchange, $0.15	49 85
1876.		
Jan. 6	Lafayette Brown, on note $34.00; interest, $1.94	35 94
8	Treasurer of State, income of Endowment Fund	1,000 00
	J. S. Thomas, on note, $46.66; interest, $5.44	52 10
	L. C. Shope, on note	30 00
	W. Bettis, on note, $46.66; interest, $5.49	52 15
	J. Herdman, on note, $35.58; interest, $2.20	37 78
	P. O'Brien, on note, $36.67; interest, $8.65	45 32
13	J. Sullivant, proceeds of sales of Virginia Military lands	1,200 00
	J. Dougherty, interest on two notes	10 00
19	J. Hayslip, on note, $21.57; interest, $2.54	24 11
	John and Leonidas Copass, two notes, $38.67; interest, $4.43	43 10
27	C. J. Thompson, on note, $53.71; interest, $7.06	60 77
	Students, on winter term bills, $260.00, less deposit fee, $130.00	130 00
31	Treasurer of State, income of Endowment Fund	1,000 00
Feb. 2	Students, on winter term bills	271 00
	President Edward Orton, house rent	105 00
12	Students, on winter term bills	97 00
	Plummer, Webb, and Walsh, on note, $250.00; interest, $14.40	264 40
	J. C. Freeman, on note, $64.94; interest, $3.66	68 60
16	J. P. P. Peck, on note, $298.00; interest, $22.10	320 10
17	John Cross, on note, $43.00; interest, $4.65	47 65
21	G. W. Lewis, on note, $20.00; interest, $1.10	21 10
26	Jarret Newman, on note	22 52
	L. D. Branham, on note	28 13
	H. P. K. Peck, on note, $132.69; interest, $10.63	143 32
29	Treasurer of State, income of Endowment Fund	1,000 00
Mar. 3	same " " "	1,000 00
	Students, on winter term bills	45 00
9	Jno. Little, Attorney-General, proceeds of W. Failing's subscription	301 72
11	J. A. Reed, on note, $95.15; interest, $4.35	99 50
31	Treasurer of State, income of Endowment Fund	1,000 00
	President Edward Orton, house rent	70 00
April 6	Treasurer of State, income of Endowment Fund	1,000 00
	L. D. Branham, on note, $10.43; interest, $4.45	14 88
13	Treasurer of State, income of Endowment Fund	1,000 00
19	J. A. Reed, balance of note, $2.56; interest, $12.19	14 75
	Students, on spring term bills, $396.00, less deposit fee, $105.00	291 00
29	Treasurer of State, income of Endowment Fund	2,000 00
	Students, on spring term bills	134 00
	H. Schneider, on notes, $44.58; interest, $2.67	47 25

STATEMENT IV.—Continued.

Date.	From whom received, and on what account.	Amount.
1876.		
May 15	Students, on spring term bills	$97 00
	President Edward Orton, house rent	35 00
	W. and J. D. Mauker, on note, $39.58; interest, $5.27	44 85
18	W. H. Taylor, on note, $33.50; interest, $1.76	35 26
27	Treasurer of State, income of Endowment Fund	3,000 00
31	Jacob Tener, on note, $32.75; interest, $1.72	34 47
June 19	Treasurer of State, income of Endowment Fund	6,000 00
	William Staley, on note, $24.50; interest, $1.22	25 72
22	President Edward Orton, house rent	70 00
	Professor Sidney A. Norton, sale of materials	14 53
24	Professor T. C. Medenhall, house rent from March 16, 1875, to July 1, 1876, $387.50, less allowed for improvements, $300.00	87 50
Aug. 15	H. Wallis and others, on note	4 90
	E. Shoemaker, on note, $16.33; interest, $1.07	17 40
26	Treasurer of State, income of Endowment Fund	1,000 06
30	Franklin National Bank, interest on balances in bank	23 45
Sep. 13	Treasurer of State, income of Endowment Fund	1,000 00
Oct. 7	same " " "	3,000 00
	F. N. Beebe, interest on note	48 00
	President Edward Orton, house rent	35 00
	Students, on fall term bills	424 00
19	same " "	192 00
	Franklin National Bank, interest on bank account to the 15th	1 80
23	Treasurer of State, income of Endowment Fund	3,000 00
Nov. 1	President Edward Orton, house rent	35 00
13	Treasurer of State, income of Endowment Fund	2,000 00
	J. L. Newland, on note, $33.33; interest, $4.00	37 33
	William Staley, on note, $38.33; interest, $2.50	40 83
	Students, on fall term bills, $85, less deposit fees to be refunded, $85	
15	L. C. Shope, on note	9 90
	Total receipts, including balance, November 15, 1875	$40,538 83
	Total expenditures for same period, as per following account in detail	38,517 30
	Leaving balance of cash on hand in designated depository	$2,021 53

STATEMENT V.

A Detailed Account of Orders Paid by Henry S. Babbitt, Treasurer of Ohio Agricultural and Mechanical College, during the Fiscal Year ending November 15, 1876.

No. of order.	Date.	To whom paid, and for what purpose.	From what appropriation.	Amount.
	1875.			
322	Aug. 16	Pittsburgh, Cincinnati and St. Louis Railway Company, freight	Current expenses	$6 14
373	Nov. 23	Prof. A. H. Tuttle, salary for November	Salaries	250 00
374	24	" S. A. Norton, " "	"	250 00
375	24	" J. H. Wright, " "	"	150 00
376	25	" Jos. Millikin, " "	"	250 00
377	27	" N. S. Townshend, " "	"	250 00
378	29	Pres. Edward Orton, " "	"	350 00
379	30	Prof. N. S. Townshend, farm labor and improvements	Farm, labor, and improvements	500 00
380	30	" T. C. Mendenhall, salary for November	Salaries	250 00
381	30	" Wm. Colvin, " "	"	250 00
382	30	" R. W. McFarland, " "	"	250 00
383	30	" Thos. Mathew, " "	"	60 00
384	30	Miss Alice Williams, " "	"	45 00
385	Dec. 2	Ohio Furniture Company, chairs and tables	Furniture and apparatus	196 50
386	2	S. S. Martin, salary, $58.33; expenses, $29.75	Salaries and current expenses	88 08
387	3	Aston, Taylor & Huff, stoves	Furniture and apparatus	11 80
388	3	" "	" "	136 20
389	7	E. A. Fitch, coal	Current expenses	400 00
390	9	J. Sullivant, salary for November	Salaries	166 66
391	14	G. W. Gleason, books	Library	27 40
392	15	E. A. Fitch, coal	Current expenses	66 21
393	15	Prof. S. A. Norton, chemicals	"	27 48
394	16	Comly & Francisco, blank-book	"	3 00
395	17	Pres. Edward Orton, salary for December	Salaries	350 00
396	17	Prof. N. S. Townshend, " "	"	250 00
397	17	" T. C. Mendenhall, " "	"	250 00
398	17	" A. H. Tuttle, " "	"	250 00
399	17	" Jos. Millikin, " "	"	250 00
400	17	" A. W. McFarland, " "	"	250 00
401	17	" S. A. Norton, " "	"	250 00
402	17	" Wm. Colvin, " "	"	250 00

403		17	" J. H. Wright, " "	"	150 00
404		17	" Thos. Mathew, " "	"	60 00
405		18	Miss Alice Williams, " "	"	45 00
406		23	Alfred Ritson, chemicals	Current expenses	32 50
407		23	" "	"	26 80
408		24	Wenz & Heyder, sewer-pipe, etc	Boarding-hall	6 80
409		27	J. Sullivant, salary for December	Salaries	166 66
410		27	S. S. Martin, salary, $58.33; expenses, $18.25	Salaries and current expenses	76 58
411		31	American Express Company, freight	Current expenses	22 45
412		31	Kilbourne, Jones & Co., hardware	"	59 45
413		31	Aston, Taylor & Huff, stoves	"	98 70
	1876.				
414	Jan.	6	J. & G. Butler, three barrels cement	Repairs	6 75
415		6	Ralph Leete, survey of Virginia Military lands	Virginia Military lands	200 00
416		12	Kaiser & Son, painting boarding-hall	Boarding-hall	118 25
417		14	Geo. Engelke, repairing "	"	66 77
418		17	Columbus Transfer Company, freight	Current expenses	7 17
419		20	Slade & Kelton, lumber	"	12 82
420		28	Pres. Edward Orton, salary for January	Salaries	350 00
421		28	Prof. N. S. Townshend, " "	"	250 00
422		28	" T. C. Mendenhall, " "	"	250 00
423		28	" A. H. Tuttle, " "	"	250 00
424		28	" Jos. Millikin, " "	"	250 00
425		28	" R. W. McFarland, " "	"	250 00
426		28	" S. A. Norton, " "	"	250 00
427		28	" Wm. Colvin, " "	"	250 00
428		28	" J. H. Wright, " "	"	150 00
429		28	" Thos. Mathew, " "	"	75 00
430		28	Miss Alice Williams, " "	"	45 00
431		28	S. S. Martin, " "	"	58 33
432		29	E. B. Armstrong & Co., repairing furnace of boarding-hall	Boarding-hall	146 25
433		31	J. Sullivant, salary for January	Salaries	166 66
434		31	Ralph Leete, survey of Virginia Military lands	Virginia Military lands	100 00
435		31	S. S. Martin, labor	Current expenses	16 80
436		31	J. W. Eyler, Virginia Military lands	Virginia Military lands	35 00
437		31	A. H. Tuttle, specimens	Furniture and apparatus	254 00
438	Feb.	2	J. B. Potts, apparatus	" "	12 68
439		2	G. F. Wheeler, brooms, etc	Current expenses	6 88
440		4	Columbus Gas Company, repairing gas-works	Repairs	22 17
441		7	Ralph Leete, expenses Virginia Military lands	Virginia Military lands	150 00
442		8	Stitt, Price & Co., lime	Current expenses	1 80
443		9	G. Stacy & Co., retorts	"	110 00

No. of order.	Date.	To whom paid, and for what purpose.	From what appropriation.	Amount.
	1876.			
444	Feb. 24	A. Waddle, expenses	Expenses trustees	$24 35
445	26	Pres. Edward Orton, salary for February	Salaries	350 00
446	26	Prof. N. S. Townshend, " "	"	250 00
447	26	" T. C. Mendenhall, " "	"	250 00
448	26	" Jos. Millikin, " "	"	250 00
449	26	" R. W. McFarland, " "	"	250 00
450	26	" A. H. Tuttle, " "	"	250 00
451	26	" S. A. Norton, " "	"	250 00
452	26	" Wm. Colvin, " "	"	250 00
453	26	" J. H. Wright, " "	"	150 00
454	26	" Thos. Mathew, " "	"	75 00
455	26	Miss Alice Williams, " "	"	45 00
456	26	S. S. Martin, " "	"	58 33
457	26	Prof. Thos. Mathew, expenses	Current expenses	6 04
458	26	B. H. Howe, materials	"	11 00
459	March 2	Ralph Leete, expenses	Virginia Military lands	125 00
460	4	J. Sullivant, salary for February	Salaries	166 67
461	5	S. S. Martin, assistance	Current expenses	12 50
462	12	Blesch & Klie, repairing boarding-hall	Boarding-hall	108 45
463	13	Prof. T. C. Mendenhall, telegraph	Telegraph	125 00
464	14	Asa Gray, "Flora Braziliensis"	Library	8 10
465	25	Halley & Schwarz, repairs	Repairs	5 60
466	25	Prof. Jos. Millikin, salary for March	Salaries	250 00
467	25	Pres. Edward Orton " "	"	350 00
468	25	Prof. T. C. Mendenhall, " "	"	250 00
469	25	" N. S. Townshend, " "	"	250 00
470	25	" A. H. Tuttle, " "	"	250 00
471	25	" R. W. McFarland, " "	"	250 00
472	25	" S. A. Norton, " "	"	250 00
473	25	" J. H. Wright, " "	"	150 00
474	25	" Wm. Colvin, " "	"	250 00
475	25	" Thos. Mathew, " "	"	75 00
476	25	Miss Alice Williams, " "	"	45 00
477	25	S. S. Martin, " "	"	58 33

478		29	C. F. Davis, books	Library	9 56
479		31	G. W. Sinks, Cashier, Virginia Military lands	Virginia Military lands	50 00
480		31	Prof. T. C. Mendenhall, apparatus	Furniture and apparatus	454 03
481	April	5	G. F. Wheeler, supplies	Current expenses	15 25
482		7	J. Sullivant, salary for March	Salaries	166 66
483		7	" freight, etc	Current expenses	13 00
484		11	S. S. Martin, assistance	"	19 00
485		20	Kaiser & Bro., repairing boarding-hall	Boarding-hall	14 82
586		25	Prof. A. H. Tuttle, salary for April	Salaries	250 00
487		26	" N. S. Townshend, " "	"	250 00
488		26	" S. A. Norton, " "	"	250 00
489		26	Pres. Edward Orton, " "	"	350 00
490		26	Prof. Jos. Millikin, " "	"	250 00
491		26	" T. C. Mendenhall, " "	"	250 00
492		26	" R. M. McFarland, " "	"	250 00
493		26	" Wm. Colvin, " "	"	250 00
494		26	" J. H. Wright, " "	"	150 00
495		26	" Thos. Mathew, " "	"	75 00
496		26	Miss Alice Williams, " "	"	45 00
497		26	S. S. Martin, " "	"	58 33
498	May	2	J. Sullivant, " "	"	166 66
499		2	" sundries	Expenses of trustees, $1.70; current expenses, $1.60; imp. grounds, $26.25	29 35
500		13	Columbus Transfer Company, transportation	Furniture and apparatus	3 00
501		13	Prof. N. S. Townshend, team-work	Improving grounds	84 87
502		18	J. R. Cole, books	Library	7 50
503		24	R. G. Hanford & Son, trees	Improving grounds	63 00
504		26	Pres. Edward Orton, salary for May	Salaries	350 00
505		26	Prof. N. S. Townshend, " "	"	250 00
506		26	" T. C. Mendenhall, " "	"	250 00
507		26	" R. W. McFarland, " "	"	250 00
508		26	" Joseph Millikin, " "	"	250 00
509		26	" A. H. Tuttle, " "	"	250 00
510		26	" William Colvin, " "	"	250 00
511		26	" S. A. Norton, " "	"	250 00
512		26	" J. H. Wright, " "	"	150 00
513		26	" Thomas Mathew, " "	"	75 00
514		26	Miss Alice Williams, " "	"	45 00
515		26	S. S. Martin, " "	"	58 33
516	June	6	J. Sullivant, " "	"	166 66
517		6	Adams, Weadon & Co., lumber	Repairs	123 72
518		6	Alfred Ritson, supplies	Current expenses	17 00

No. of order.	Date.	To whom paid, and for what purpose.	From what appropriation.	Amount.
	1876.			
519	June 10	S. S. Martin, extra labor	Current expenses	$17 83
520	10	Professor N. S. Townshend, farm improvements	Farm implements	500 00
521	10	Nevins and Myers, printing, etc	Current expenses	58 70
522	10	C. E. Burr, jr., attorney, on Kammacher & Stark's contract	Main building	998 23
523	14	Kammacher & Stark, balance of contract	" "	1,189 00
524	19	Prest. Edward Orton, salary for June	Salaries	350 00
525	19	Prof. T. C. Mendenhall, salary for June	"	250 00
526	19	" N. S. Townshend, " "	"	250 00
527	19	" Joseph Millikin, " "	"	250 00
528	19	" R. W. McFarland, " "	"	250 00
529	19	" A. H. Tuttle, " "	"	250 00
530	19	" William Colvin, " "	"	250 00
531	19	" S. A. Norton, " "	"	250 00
532	19	" J. H. Wright, " "	"	150 00
533	19	" Thomas Mathew, " "	"	75 00
534	19	Miss Alice Williams, " "	"	45 00
535	19	Professor A. H. Tuttle, specimens	Furniture and apparatus	12 85
536	23	Columbus Herald, advertising	Current expenses	2 50
537	24	Blesch & Klie, plumbing	Repairs	17 21
538	24	S. S. Martin, salary, $58.33; assistant, $6.85	Salaries and current expenses	65 18
539	24	Col. Edward C. Mason, services of band	Current expenses	30 00
540	24	Stephen Hicks, carriage hire	Expenses trustees	6 00
541	24	J. W. Queen & Co., Zoological department	Furniture and apparatus	138 75
542	July 1	J. Sullivant, salary for June	Salaries	166 66
543	7	Comly & Francisco, advertising	Current expenses	8 25
544	7	President Edward Orton, sundries	" "	90 10
545	18	Orebaugh & Brodbeck, advertising	" "	3 00
546	18	Kilbourne, Jones & Co., hardware	" "	16 95
547	22	George W. Gleason, books, $31.60; stationery, $5.05	Library and current expenses	36 65
548	22	Dr. Maris, specimens	Apparatus, etc	5 00
549	29	S. S. Martin, salary, $58.33; assistant, $6	Salaries and expenses	64 33
550	29	Professor N. S. Townshend, improving grounds	Improvement of grounds	226 83
551	August 3	Professor Thomas Mathew, materials	Current expenses	10 45
552	3	" " "	Drawing department	50 00

553		9	J. Sullivant, salary for July	Salaries	166 66
554		12	Ralph Leete, expenses Virginia Military lands	Virginia Military lands	75 00
555		26	S. S. Martin, salary, $58.33; repairs, $3.75	Salaries and repairs	62 08
556		28	Nelson Morris, repairs	Repairs	228 68
557	Sept.	2	Robert Clarke & Co., books	Library	25 00
558		2	J. Sullivant, salary for August	Salaries	166 66
559		4	Professor R. W. McFarland, salary for September	"	250 00
560		4	Morgan Thomas, improving grounds	Improving grounds	31 50
561		5	M. A. Suydam & Co., coal	Current expenses	459 00
562		5	Adams, Weadon & Co., lumber	Repairs	134 00
563		6	Kinnear & Sons, repairs	"	16 50
564		9	Charles Neagle, repairs	"	46 50
565		12	Professor A. H. Tuttle, books	Library	50 55
566		12	" " salary for September	Salaries	250 00
567		16	E. A. Fitch, gas coal	Current expenses	36 95
568		16	Nevins & Myers, printing catalogues	" "	134 35
569		18	Nelson Morris, painting boarding-hall	Boarding-hall	50 00
570		20	Blesch & Klie, table in laboratory	Improvements and repairs	80 67
571		23	Morgan Thomas, labor on grounds	Improving grounds	8 75
572		23	S. S. Martin, salary for September	Salaries	58 33
573		29	Prest. Edward Orton, salary for September	"	350 00
574		29	Prof. T. C. Mendenhall, " "	"	250 00
575		29	" N. S. Townshend, " "	"	200 00
576		29	" Joseph Millikin, " "	"	250 00
577		29	" S. A. Norton, " "	"	250 00
578		29	" William Colvin, " "	"	250 00
579		29	" J. R. Smith, " "	"	150 00
580		29	" Thomas Mathew, " "	"	75 00
581		29	Lieut. Luigi Lomia, " "	"	50 00
582		29	Miss Alice Williams, " "	"	45 00
583		30	Henry Miller, purchase of lathe	Purchase of tools	265 00
584	October	3	S. S. Martin, extra labor	Current expenses	14 87
585		5	M. A. Suydam, coal	" "	342 67
586		7	E. E. Corwin, labor	" "	16 75
587		11	Columbus Sewer Pipe Company, telegraph poles	" "	14 75
588		12	J. Sullivant, salary, $166.66; current expenses, $14.60	Salaries and current expenses	181 26
589		12	E. N. Freshman & Bro., advertising	Current expenses	215 25
590		12	Columbus Transfer Company, freight and drayage	" "	2 78
591		12	Stitt, Price & Co., lime	" "	5 60
592		17	George W. Gleason, books	Library	318 84
593		18	Nelson Morris, improving grounds	Improving grounds	200 00
594		18	John Graham, city map	Library	10 00

No. of order.	Date.	To whom paid, and for what purpose.	From what appropriation.	Amount.
	1876.			
595	Oct. 19	Zelotes Wood, agent	Insurance	$322 00
596	21	Prof. Joseph Millikin, salary for October	Salaries	250 00
597	23	Columbus Transfer Co., freight	Current expenses	1 40
598	27	Prest. Edward Orton, salary for October	Salaries	350 00
599	27	Prof. T. C. Mendenhall, salary for October	"	250 00
600	27	" N. S. Townshend, " "	"	250 00
601	27	" R. W. McFarland, " "	"	250 00
602	27	" A. H. Tuttle, " "	"	250 00
603	27	" S. A. Norton, " "	"	250 00
604	27	" William Colvin, " "	"	250 00
605	27	" J. R. Smith, " "	"	150 00
606	27	" Thomas Mathew, " "	"	75 00
607	27	Lieutenant Luigi Lomia, " "	"	50 00
608	27	Miss Alice Williams, " "	"	45 00
609	27	S. S. Martin, " "	"	58 33
610	27	S. S. Martin, materials and labor	Current expenses	40 20
611	Nov. 2	E. B. Benjamin, renewal of articles in laboratory	Apparatus, etc	89 56
612	2	Delaware Chair Company, chairs	Furniture and apparatus	68 40
613	3	Myers & Bro., advertising	Current expenses	8 00
614	4	Professor S. A. Norton, supplies	" "	105 69
615	7	President Edward Orton, expenses, $39.30; copper for laboratory, $15.80	" "	55 10
616	9	J. Sullivant, salary for October	Salaries	166 66
617	9	Adams, Weadon & Co., lumber	Current expenses	38 15
618	15	H. S. Babbitt, treasurer, salary, $400; expenses, $34.31	Salaries and expenses	434 31
619	15	H. S. Babbitt, paid expenses trustees	Current expenses	393 23
		Total disbursements		$38,517 30

VIRGINIA MILITARY LANDS.

The unsurveyed and unappropriated lands in that part of the State lying between the Big Scioto and the Little Miami rivers, known as the Virginia Military District, were, by an act of Congress, approved February 18, 1871, ceded to the State of Ohio, coupled with a condition that each settler on the lands should be entitled to preëmpt any quantity of land not exceeding one hundred and sixty acres, under such regulations as the General Assembly of Ohio should provide.

The State, by act of March 26, 1872, accepted said grant and conveyed the lands to the Trustees of the Ohio Agricultural and Mechanical College for the benefit of that institution. That, as well as the subsequent act of April 3, 1873, required the Trustees to survey, set off, and convey by deed to each settler forty acres, at the cost only of survey and deed. It also authorized each settler to demand, and required the Trustees to survey and convey to every such person one hundred and twenty acres additional for one dollar per acre, or such portion thereof as such settler might have had in actual possession.

In the spring of 1872 the Board of Trustees, acting by its committee upon lands, of which Hon. James M. Trimble, since deceased, was chairman, took charge of said lands and commenced the task of searching their locality, surveying, and investigating the claims of settlers, under the provisions of said act.

The available lands were supposed to be situate principally in the hilly and unsettled portions of Adams, Pike, and Scioto counties, in what is known as the "Sun-fish Hills" of Pike and the "Red Brush" country of Scioto and Adams counties, while the entire Virginia Military District embraces within its boundaries twenty-three counties, either in whole or in part.

II. The lands may be classified as follows: First, unsurveyed lands; second, lands resting on entry alone; third, fraudulent and voidable surveys; fourth, lands donated to settlers.

The bulk of the lands actually surveyed and appraised are in the hilly parts of the three counties named.

Two hundred and nineteen persons claiming to be settlers filed claims, under provisions of said acts, each demanding the statutory donation of forty acres, and in some instances the right to preëmpt additional land.

Before the necessary surveys and subdivisions required by the statute could be made of the unclaimed lands, it was absolutely necessary to

investigate each of the two hundred and nineteen claims filed, and to contest the validity of the same. This was done principally by taking testimony in the shape of affidavits and depositions before justices of the peace, and then, upon consideration of the testimony, to allow or reject each claim. Ninety-one of the applicants succeeded in bringing their claims within the provisions of the laws, and one hundred and twenty claims were rejected as fraudulent.

The ninety-nine tracts of forty acres each have been surveyed and conveyed to the occupants. They constitute an exceptional class in Ohio, who have had homes provided them by actual donation from the State.

The task of adjusting all of said claims has been onerous and expensive.

The grant of these lands by Congress to the State was procured mainly through the instrumentality of the late Hon. J. M. Trimble and some other members of the Board of Trustees, with the efficient aid of Hon. John T. Wilson, then a representative in Congress from the Eleventh District, for the purpose, really, of increasing the endowment fund of this College.

While the act donating forty acres to each settler has proven to be a cause of prolific jealousy and angry strife among settlers who were not always quick to perceive legal discriminations, it has been a fruitful source of vexation and expense to those charged with the responsible duties of adjusting those claims.

These tracts so conveyed, by reason of their commanding frontage along water-courses and at the mouths of hollows and ravines, greatly depreciated the value of adjacent lands of the College.

If the General Assembly, in the acts referred to, had simply made provision authorizing settlers to have preëmpted lands at a uniform price per acre, as *required* by the act of Congress, it would have given entire satisfaction to every settler, and at the same time largely increased the fund the College will receive from the sale of its lands in these three counties.

The lands designated as "unsurveyed" include, as well the tracts resting on mere naked entries, those unclaimed. An entry is simply a notice in writing by the holder of a warrant to the principal surveyor of an intention to survey and appropriate a particular tract. In order to make an entry available it must be followed by a survey, which must be approved by the principal surveyor, and by him certified to the Commissioner of the General Land Office. Therefore a mere entry, unless followed by a valid survey, carries nothing with it.

There appears to be in the district three hundred and forty-one "en-

tries" which have not been surveyed. These have claimed and received a large amount of attention. They have been classified by counties, and searching investigations made in several counties, to find the lands.

The records of this Virginia Military District have not at all times been kept in the most intelligible manner, so that examination upon the lands often refutes them. Lands appearing upon these records to be dependent upon entry alone have, after diligent search in the various counties, most generally been found to be covered by surveys and patents. The statements of these records and the actual facts are at times at so great variance that they have inflicted more than an ordinary amount of vexation, and it is literally impossible to determine at present the amount of lands remaining under this class. These lands will only appear by diligent search in the counties where they may be located.

III. Lands surveyed which have not been carried into patent. The undersigned, who has had personal supervision of the work in the greater part of the district during the past eighteen months, has a list of two hundred and seventy surveys not carried into patent. He also has procured copies of the surveys and lists of the original warrants, showing the number of the warrant, to whom issued, with the amount of land originally due to the holders, and the amount surveyed out of every such warrant. These have been classified by counties. The field-notes of the surveys, with a description of the warrants and the entries, have been placed in the hands of surveyors in fifteen counties in the district, for examination, survey, and *re-survey when necessary*, and this work is in progress.

IV. The surveys not patented are of two sorts, *valid* and *fraudulent*. It has not been, nor is it, the purpose or the policy of the Trustees to interfere with surveys long since made, which have not been carried into patent by reason of mere technical defects. The surveys termed *fraudulent* stand on a different footing. By act of Congress of March 3, 1855 (United States Statutes at Large, vol. 10, page 701), all holders of entries made prior to January 1, 1852, were given until March 3, 1857, to make and return their surveys to the Land Office. The power to issue patents on the surveys after the last named date was thereby annulled; yet it is certain that the provisions of this act were circumvented by locators and others charged with supervising the surveys, and many surveys were made and returned after they were *prohibited by law*. The parties were not content to defraud the law, they went further; they devised and successfully practiced a craftily planned system of fraud, which the surveys made by the College, under the direction of Mr. Trimble, and re-surveys which have been made since his death, have fully developed. It is also

certain that surveys were made up to as late a period as 1867. A brisk business in making new entries and surveys appears to have been done during the period of the "oil excitement," from 1860 to 1870.

It is due to the Commissioner and officers of the General Land Office, at Washington, to make a public acknowledgment of the services they have rendered the Board in preventing the completion of many of these frauds. In order that their true character may be known, I have selected the following cases as specimens out of many others, showing the number of survey, number of acres in warrant, and excess in each survey:

Survey No. 15440–15577–15087, having date *as of 28th of February*, 1857, for *ninety-two acres*, founded on part of military warrant No. 8385. This survey *was made some time in the year* 1866, and holds by *actual measurement* upon the ground, as shown by College re-survey, 1,168 *acres*. The land lies upon Churn Creek, in Adams county. It was patented in 1867. Suit is instituted in the Court of Common Pleas by the Trustees to recover the land.

Another survey made as and for 14 acres, based *on the same warrant*, contains, by like re-survey, 206 acres.

One for 100 acres, on warrant 8955, contains 1,359 acres.

Survey No. 16212, in the counties of Adams and Scioto, made on 118½ acres of warrant, and *duly certified to the Commissioner of the General Land Office as correct*, is found to contain 1,682 acres.

Survey 15882, made on a warrant of 400 acres, also contains 1,682 acres.

A survey on warrant No. 3943, purporting to contain 50 acres, in Adams county, contains 208 acres.

Survey 16172, made upon warrant No. 9157 and exchange warrant 512, for 187½ acres, was found to embrace within its calls 661 acres, an excess of 475 acres.

Survey 15890 and 15887, made on 77 acres of warrant, and certified for patent as correct, contains 621 acres, or a surplusage of 544 acres.

Survey 16119, for 711 acres, on warrant 8166, by re-survey contains 1,131 acres.

Survey 16046, for 100 acres, on warrant 8955, contains 355 acres.

Survey 14718 and 14721, made on 55 acres of warrant, contains 421.56 acres; excess, 366.56 acres.

The foregoing are given as specimens of many surveys made and certified as correct for patent. A large number of fraudulent surveys had been carried into patent prior to the cession of this land to the State.

All this class of surveys, upon which applications have been made for patent and patents rejected by the Commissioner of the General Land Office, have been appraised and returned to the Trustees.

The exposure of these frauds, and the filing of caveats against carrying these surveys into patent, have drawn upon the chairman of the committee on lands and his assistants the vindictive enmity of the parties engaged in those reprehensible transactions. These are not the occupants of the land, but in most cases non-resident speculators. The act of Congress approved August 31, 1852, and known as the "Scrip Act," provides that the holders of unsatisfied Virginia military warrants should be entitled to receive land scrip, acre for acre, in place of those warrants, to be located upon any lands of the United States subject to entry, at $1.25 an acre. The declaratory part of this act provides that it is a "*final adjustment*" between these warrant-holders and the United States. No one can, therefore, be justified or protected in entries and surveys after the passage of these acts and in the face of their provisions.

GENERAL REMARKS.

V. When the Trustees took possession of these lands they were an indefinite and unknown quantity. Many of the old residents were ignorant of their own boundaries, while much of the land actually vacant had been skillfully covered up and claimed by speculators.

In order to locate true boundaries, it has been necessary to survey and plat large quantities of land belonging to others, and to make connected plats, as far as practicable, over a large portion of the three counties named.

After the surveys were made, each, with its appropriate number, was transferred to suitable books, or folios, with field-notes and plats properly recorded and indexed.

The deeds of conveyance are also recorded in a separate book; also a separate book is kept containing statements of sales made and preëmptions set off.

It is believed the lands now in process of recovery will yield quite a respectable sum to the permanent endowment fund. The first appriesement, covering about sixty thousand acres of these lands, was made by Hon. J. L. Hughes, of Highland, Jno. D. Jones, of Jackson, and Jno. L Young, of Adams counties.

Portions of them are of but little value, and are appraised at mere nominal prices, the surface being very steep, and exceedingly stony. The southern and western exposures, covered with short, scrubby timber, whortleberry bushels, and greenbriers, while the northern and eastern exposures are better land, having been timbered with poplar and the varieties of oak, but they had been subject to depredations for many years before the grant was made to the State, and the more valuable portions of the timber had been removed by trespassers, as well as tan-bark.

VI.—Statement of Lands Surveyed, their Appraised Value, Number of Acres disposed of, amount of Sales, with Expenses of Survey, etc.

		Acres.
Total amount of land surveyed		76,735.44
Amount of land sold in Scioto county	18,956 acres	
" " Adams "	7,454 "	
" " Pike "	6,498¼ "	
Total amount of land sold	32,908¼ acres	
99 grants to settlers, 40 acres each	3,960 "	
Total amount of lands disposed of		36,868.25
Lands remaining unsold		39,867.19
Amount of sales in Scioto county	$20,128 53	
" " Adams "	9,935 17	
" " Pike "	10,359 42	
Total amount of sales		$40,423 12
Appraised value by counties—		
Adams	$37,461 21	
Pickaway	5,216 00	
Pike	13,057 15	
Scioto	18,553 09	
Total amount of appraised value		$74,287 45

EXPENSES.

The expenses incurred on this account by the Hon. James M. Trimble (deceased), as shown by his accounts and by the annual reports of the Treasurer, for the years 1872 and 1873, amounted to	$6,013 25
The expenses from 1874 to 1876, inclusive, as shown by the Treasurer's report, have been	1,497 00
Besides the above, the expenses of the past year, as far as ascertained to November 15, but not yet reported in detail, amount to	3,382 60
Total to November 15, 1876	$10,892 85
[The *cash* receipts, on the same account, for the same period, as reported by the Treasurer, were	$13,877 17]

The above statement includes every class of expense made in and about the recovery of these lands, as well as a very considerable amount expended in the survey and recovery of lands not yet appraised, as well as cases pending, statements of which have been filed from time to time with the Secretary of the Board.

The record books, plats, and papers are securely kept in a large iron safe, in the office at Portsmouth, in charge of Captain Charles N. Barton, who conducts the sale department.

The amount of care, skill, and labor performed, in and about these lands, is more fully shown by the plats, books, and papers in the office at

Portsmouth. It is very difficult to make even an approximate estimate of the additional quantity of land that will be reclaimed, or the probable amount likely to be realized from this source.

There are a good many cases maturing for the final action of the Commissioner of the General Land Office, while the surveyors, now engaged in various parts of the district, are from time to time reporting small tracts of land as *vacant*. Several additional re-surveys have been made during the past six months, and filed as caveats, to prevent the issue of patents upon fraudulent surveys.

The Board of Trustees, and the agents in their employ, have, thus far, conducted this important trust without litigation or serious difficulty with any seller or purchaser.

RALPH LEETE,
Chairman of Committee on Virginia Military Lands.

REPORT OF THE PRESIDENT.

HON. RALPH LEETE, *President of Board of Trustees:*

DEAR SIR: I hereby present my fourth annual report to the Board of Trustees, covering the year from November 15, 1875, to November 15, 1876.

I am happy to record another year of steady gain and growth for the institution under your control. The number of students has been increased, there being now one hundred and twenty on the College roll, and by an additional year of faithful and successful work on the part of those who have been with us from the opening of the College, the grade of scholarship has been proportionally advanced. It is to be borne in mind that the College has not been open long enough to allow those that entered its lower classes to complete any of our regular courses of studies. We are just beginning to reap the advantages that result from having a body of advanced and well-trained students among us. During the present and ensuing years several young men will have finished the work prescribed in our various courses of study. It is possible that one or more candidates for degrees will present themselves at our next commencement.

The fact that our students are rapidly falling into the regular courses of study established by us, is to be noted as an indication of progress. For all who propose to take the degrees of the institution, a prescribed course of two years in length has been laid down, which must be completed before the elective courses can be entered upon. This required course provides a good foundation for all subsequent work, giving the student such a knowledge of his own language, of elementary mathematics, including algebra, geometry, and trigonometry, and of the leading branches of natural science, as all educated persons should possess. Though this is a *required* course for those only who design to take a collegiate degree, it is evident that it is also exactly the work that the large body of students who enter college without any definite plan of completing a course can take up with the most profit. We accordingly urge it in strong terms upon all

who enter without a satisfactory knowledge of these elementary branches. Students that have enjoyed high-school privileges have already secured a part at least of this training, and can profitably enter upon advanced work. But for the larger number, that has not had these advantages, the College has no studies that are at all comparable in adaptation and usefulness to this required course. I am happy, therefore, to say that the steady pressure which we are bringing to bear in favor of regular and well-ordered work is telling upon our students, and that a constantly increasing proportion is found in the preliminary course to which I have referred.

It must be borne in mind that this required course is part and parcel of the scheme which gives so great freedom of choice in all the subsequent stages of education. Such freedom is profitable and possible only where a suitable foundation has been laid.

There are, of course, some exceptions to the statement, that all who have not taken the studies of the required course would find it to their best interest to take them here. Some students come here for a very limited time, and with a special purpose to fit themselves as speedily as may be for some particular position. To such all possible advantages are offered, as well as to the smaller class of special students that is prepared to take up advanced work in some department of study.

The reports of the several departments will show you something of the quantity and quality of the work that has been done by the students during the year. It is safe to say that in both respects there is, as there should be, a manifest gain over any preceding year in our brief history. The system which we have followed from the first eliminates slowly but surely those who are unable or unwilling to do the work which we ask, while each year of faithful study on the part of those who remain renders them able to show better results in the several departments which they enter.

It must not be forgotten in this connection that the method of teaching which is pursued in our advanced courses is comparatively new, so far at least as several departments are concerned. The laboratory method which we have established in the subjects of natural science taxes much more severely the time and resources of the instructor than the method which it displaces, viz., that of text-book and formal recitation. Our professors have thus far found each year's experience to be valuable in enabling them to make a better adaptation of the system to the necessities of their students.

As to the advantages of this method of study very strong statements are warranted. It justifies itself not only by the firm and real hold that

it gives to the student upon the subject of study, but also by the superior interest with which it invests each subject.

Questions are so often asked by those interested in the College in a general way, as to the system of instruction pursued, and as to the results attained, that it has been deemed best to make more extended statements upon these points than heretofore. There will accordingly be found in the appended professorial reports quite full information upon these subjects. Whoever is interested can here learn what kind of work the College aspires to do, and the way in which it hopes to do it. The question to which we are often obliged to reply, how our course of study varies from that of the other colleges of the State, is fully answered here.

The constitution of the Faculty has been changed during the year in the following particulars:

1. Assistant Professor John H. Wright resigned at the close of the last academic year the position which he had held in the College from its opening, viz., the professorship of "the Latin and Greek Languages and Literature," to enter upon an extended course of study in Europe. The high order of scholarship and the pains-taking and conscientious fidelity which Prof. Wright brought to his department made his withdrawal alike regretted by his associates and classes.

The vacant professorship was filled in July by the appointment of Mr. J. H. Smith, of Columbus. Mr. Smith graduated, four years ago, at Amherst College, with high rank, and has been for three years a successful teacher of Latin and Greek in the Columbus High School.

2. In accordance with existing legislation, and in compliance with the repeated application of your Board, the Secretary of War has detailed an officer of the United States army to give instructions in military science and tactics in this institution. Lieutenant Luigi Lomia, of the 5th Artillery, was directed, in June last, to report to the College for this purpose. He entered upon the duties of this office at the beginning of the present collegiate year. In addition to his duties as Military Instructor, he has been made, by the act of your Board, Adjunct Professor of Mathematics, the subjects of plane and spherical trigonometry, geometry, and the differential and integral calculus being turned over to him.

The subjects of mathematics and civil engineering, as they ought to be taught in an institution like this, obviously transcend any one man's limits of time and strength. Professor McFarland, who holds this professorship, has been able to meet its demands hitherto, the full quota of classes in these subjects not yet being reached, but as the number of students increases, and as classes are necessarily multiplied, it would be impossible for him to do full justice to both subjects. The title of his

professorship remains the same, viz., Mathematics and Civil Engineering, but he will henceforth be able to devote himself chiefly to the subject of civil engineering, as its growing importance in the College demands, while, at the same time, his great experience and skill in mathematical instruction can be utilized to some extent. The division of these subjects renders possible a somewhat more extended course in mathematics.

The introduction of military science and tactics into the College is an important subject, as your Board seems to have considered it, from the early and urgent efforts that you have made to secure the detail of an army officer for this purpose. I deem it a matter of congratulation that you have at last succeeded. The subject seemed important enough to Congress, when it passed the land-grant on which the College is founded, to be distinctly included among the branches that must be taught here, and laws have since been passed allowing the detail of officers, trained and supported at the public expense, to give this instruction.

The subject of military science will take its place among the other branches of our courses of study, to be elected and pursued by those who see fit. For the present year, instruction in it will be given in weekly or semi-weekly lectures.

Military drill I consider to be of far more practical importance in an institution like this than military science, because, in addition to the very serviceable knowledge acquired directly, there are certain incidental objects gained, which it seems impossible to secure in any other way, and which are sure to prove of signal profit.

Before the introduction of this new department, your Board decided the practically important question, Who shall be the subjects of military drill? Your action makes the drill obligatory upon all able-bodied male students that do not claim exemption on the ground of conscientious scruples. This action, I may remark, is in entire accord with that of other similarly founded State institutions that have applied for and secured army officers as instructors in these subjects. All of these institutions, without exception, so far as I can learn, make military drill obligatory during a portion or the whole of the college course.

For the present, four exercises in drill have been fixed for each week, thirty-five minutes being given to each exercise, making an aggregate of two and a half hours per week. The time selected for drill is 11 A.M., the morning recitations being interrupted for the necessary interval at this time, not only without detriment, but with positive advantage to the students. The relief and freshness which it brings to them makes it safe to say that the drill costs the College no time.

As a necessary adjunct to military organization, uniform dress for the students has been adopted. Reference was had in its selection to college uses as well as to the requirements of the drill. A military cap and a coat and pantaloons of navy blue constitute the uniform, the cost of which is about twenty dollars. Its adoption entails little or no increased expense upon the student, as it will be quite as serviceable as any ordinary suit, and as all necessary time is allowed in making the change. Its use brings with it several incidental advantages that are not to be overlooked. It secures equality in dress among the students, the rich and the poor standing on common ground. It promises to build up college spirit, of which we have felt the lack hitherto, and, in making the students easily recognized as belonging to the College, it puts upon them an additional motive to bear themselves in a manly way when off of college ground.

Our experience is too brief to make any conclusions drawn from it in relation to this department valuable, but it is proper to note that the introduction of military drill into the College has been very cordially received by the students. The several features of the system have been approved by them with a near approach to unanimity, and the effect upon them is already manifest, in an improvement of bearing and physique.

A requisition upon the War Department has brought us a full supply of arms and ordnance of the most approved patterns.

I have discussed, in previous reports, the terms of admission to the College, and have nothing to add upon this subject, except that our experience is constantly confirming the wisdom of requiring at least as much preparation as we now do. Students occasionally find entrance to the College while still below the required grade of scholarship. Almost without exception such students prove a drawback to the classes that they enter. They require shorter lessons and more elementary textbooks than the rest of the class; in other words, they need the discipline of some one of the schools of which Ohio is full, rather than that of a college. To show how very moderate our present demands in the way of preparation are, I append the questions upon which entrance examinations were held in September last. When I add the fact that the percentage required for passing was sixty-six, and that no student was rejected for ranking even as low as fifty per cent. in a single study, it will certainly be apparent that we are not over exacting in this matter. Any lowering of the standard of admission will inevitably result in a lowering of the grade of work which is done here.

Questions for Entrance Examinations, September 17, 1876.

GEOGRAPHY.

1. What is latitude, and what longitude?
2. In what direction are the following places from the North Pole—Cleveland, San Francisco, Rio Janeiro?
3. Which extends farthest south, Africa, Australia, South America?
4. What and where is the Crimea?
5. On what river of France is Paris situated?
6. What States would be crossed in passing directly from Indiana to Alabama?
7. What States east of the Mississippi have neither sea nor lake coast?
8. Is the level of Lake Superior higher or lower than that of the Atlantic Ocean, and how can you prove it?
9. Mention the five most important cities situated on the Mississippi and its tributaries in the order of their size.
10. Name the counties (with their county seats) bordering on this county.

GRAMMAR.

1. How many elementary sounds are there in English?
2. Give the several modes of forming the plural of nouns, with the changes of spelling of the singular involved.
3. State the principle determining the number of the verb when the subject is a collective noun, with illustrative sentences.
4. State the rule for the person of the verb when the subjects are of different persons.
5. State the distinction between the two methods of conjugation: or, what are the two methods of forming the past tense and past participle?
6. State the kinds of adverbs, with sentences containing one of each kind.
7. State the kinds of conjunctions, with sentences containing one of each kind.
8. Write sentences containing *that* used in its several senses.
9. Give the general rule for the position of *only*, varying the sentence *Only I lament my fallen friend*, varied to show its force in different positions.
10. Define—1. A phrase.
    2. A clause.
    3. (*a*) A simple sentence.
       (*b*) A compound sentence.
       (*c*) A complex sentence, with an illustration of each.

ARITHMETIC.

1. Find the difference between 1.001 and 10.10.
2. Divide 1.001 by 10.01.
3. Add $\frac{4}{7}$, $1\frac{1}{2}$, $\frac{3}{7}$ of $2\frac{1}{2}$, and $\frac{2}{11}$.
4. Give the rule for adding fractions.
5. Find the square root of 23.006 to 4 places.
6. If $2\frac{1}{2}$ lbs. cost $4\frac{1}{2}$ dollars, what will be the cost of $17\frac{1}{7}$ lbs.?
7. Find the simple interest of $365.25 for 4 years, 5 months, and 6 days, at 8 per cent. per annum.
8. Find the original cost of an article sold for $2.80, on which there was 20 per cent. gain.
9. If an article is bought for $12.72 and sold at an advance of 12 per cent., what is the selling price?

10. If 7 men in 10 days, working 10 hours a day, perform a piece of work of which the difficulty is reckoned 5, how many days of 8 hours each must 10 men work to finish the same amount if the difficulty is reckoned 7 ?

ALGEBRA.

1. From x^2y-xy^2-3ab take $2xy^2-3x^2y+3ba$.
2. Divide x^4+y^4 by $x+y$.
3. Write out the three theorems respecting the square of the sum of two quantities, the square of the difference, and also the product of the sum and difference.
4. Factor the following quantities:

x^2-y^2, $x^2-2xy+y^2$, $x^2+2xy+y^2$, $ax+bx^2-cx^2$, and a^3+x^3.

5. Find the greatest common divisor of x^3+5x^2+4x-2 and x^2+x-2.
6. Multiply $\frac{x^2+y^2}{3}$, $\frac{9}{x^2-y^2}$, $\frac{x+y}{x^2-2xy+y^2}$, $\frac{(x-y)^2}{3(x^2+y^2)}$,

using cancellation.

7. Divide the product of $\frac{x^2-a^2}{x^2-2ax+a^2}$ and $\frac{x+a}{x-a}$,

by the product of $\frac{x^2-a^2}{x^2+2ax+a^2}$ and $\frac{(x+a)^2}{x-a}$.

8. Clear of fractions the following equation:

$$6x-\frac{2x}{3}-\left(\frac{4x-1}{2}\right)-\frac{4y+2}{6}+3=-\frac{3y-1}{4}+5.$$

9. Divide the number 160 into 3 parts, such that the second shall be three times the first, and the third three times the sum of the first and second

10. A's money added to $\frac{1}{2}$ of B's gives a sum $50 less than twice B's money; but $\frac{1}{2}$ of A's added to twice B's equals three times A's, plus $15. Find the two sums.

The geological museum is now receiving valuable additions from materials gathered for the Centennial Expcsition. With the consent of your Board, a small portion of my time last year was spent, under the direction of the State Centennial Managers, in getting together and arranging at the Exposition a series of specimens representing the economical geology of the State, with the understanding that as much of the collection as possible should be turned over to the College at the close of the display at Philadelphia. In accordance with this arrangement we have come into possession of a considerable amount of valuable material. The accessions include a set of Ohio building stones, cut to one cubic foot, which, with the blocks already on hand in the museum, make a complete representation of the varieties that are largely worked in the State at the present time. Our display of coals, ores, fire-clays, etc., is also largely reënforced, and the valuable geological map of the State, which was prepared here under my direction by Mr. Mathew, is returned to us. I am glad to record the fact that new tables are in process of construction for the reception of this material in the museum.

The subject of Geology is one of the last to be reached in our College course. As a knowledge of Chemistry, Physics, Zoology, and Botany is

indispensable to the proper progress of the student in this subject, some acquaintance with all these branches is required as a condition to entering upon the study. During the last year and the present year, however, students have reached this subject in due course. Three students pursued the study during the last collegiate year, and seven are at present engaged in it.

Instruction in this department is given by lectures, text-books, and field practice.

The subject of Lithological Geology is taken up in lectures. The student is taught to recognize, promptly and certainly, at least twenty species of the minerals most commonly met with, and also ten to fifteen of the rock formations that are most abundant. The chemical composition of minerals and rocks is discussed, and such of the students as are working in the chemical laboratory are expected to make qualitative and, if possible, quantitative analyses of some of the specimens which they meet with in their geological study. I may remark here that the chemical and physical laboratories of the College have yielded valuable service to my own department, through results attained in them by students. Prof. Norton's report gives example of these services in the quantitative analyses of a number of Ohio minerals, executed under his supervison by Mr. C. C. Howard, one of the students of the College. Some of these analyses have economical applications, and have been already published by business firms in the way of advertisement.

Stratigraphical Geology is taught by field practice and lectures. The student is made thoroughly acquainted with the various rock exposures that are readily accessible from Columbus, and is taught how to recognize in the field, and how to represent in sections and upon maps, the various facts with which he meets. Two of last year's class, Messrs. C. H. Dietrich and W. Farrar, rendered valuable assistance in constructing the first geological map of Franklin county that has made any near approach to accuracy.

The orderly series of Ohio formations gives but little opportunity to observe and determine the "dip" of strata, and none to investigate the phenomena of "faults," which make so important an element in geological work generally. These subjects, therefore, are treated of in lectures.

The Geology of Ohio is also taught in lectures. The museum of the College contains every thing necessary to make the student perfectly familiar with our geological scale in all its essential elements.

In Historical Geology generally, Dana's Manual is used as a text-book, the recitations in it being interspersed with lectures whenever particular subjects seem to require fuller treatment than the text-book furnishes In Paleontology enough is done to enable the student to determine the gen-

eral geological horizon of any field. The characteristic fossils of the various periods are studied until they have become easily recognizable.

As the year in Economical Geology, the second year of the geological course, has not yet been completed by any students, it is not necessary to state the topics or methods of the study that are to be followed in it.

The subject of Physical Geography, which is a subdivision of Geology in its broader sense, falls naturally to my department. This subject occupies one and a half terms in the first year of our required course. Last year a class of twenty-five students was engaged in this study. The work was mainly text-book work, but I spent a few weeks in giving to the class an elementary course of lectures on the Geology and Physical Geography of Ohio, requiring full notes of the lectures and the reproduction of the geological map of the State. The results obtained were satisfactory.

As to the wants of the College, it is not necessary to make extended statement here. Every department has its own requirements, and these are set forth in the appended reports. Good use is made of all we have, and the Board can rest assured that what they are able to grant will be turned to good account. I venture, however, to reënforce the application of the Professor of Physics and Mechanics for a machine to test the strength of materials. In addition to its other uses, two important geological interests of the State will be effectively served by such a machine, viz., building stones and cements. Ohio has a great variety and an unlimited quantity of building stones, and also a large supply of cement rocks in various portions of her geological scale; but though the value of these products rises to millions of dollars annually, no scientific tests of their strength and adaptations to the various demands of architecture have ever been made at home. For all the facts that we have in regard to these points we are indebted to examinations made beyond the limits of the State.

I renew and emphasize my recommendation of last year, that the Trustees seek to secure a change in the title of the College. The present title, as it is commonly understood, and especially as it is commonly abbreviated, is certainly a misnomer, and I am satisfied that it imposes upon the College a slower rate of progress than it might otherwise enjoy. As I stated in my last report, harm is done by it in two ways: those who take their estimate of the institution from its title alone are sure that it has nothing in its courses which they desire, while some who judge the College from its generous range and scope of its courses of study are sure that it is proving false to a narrow purpose which they deduce from its title.

The completion of the new pavement on High Street, from the depot to the College grounds and beyond, and the establishment of a well-equipped and efficiently managed street car line on this route, add very greatly to the accessibility of the College. It can now be reached at all seasons of the year without inconvenience or delay.

A measure of great importance to the College, and, as I believe, of greater importance to the State, was brought forward in the Legislature last winter and is now awaiting action in the lower House. The measure referred to establishes in the College, at the expense of the State, a department of Mining Engineering, with all needful equipment. The addition of this single department will enable the College to furnish all the advantages of a well-endowed mining school. The accessory departments are already in successful operation. The subjects of Mathematics, Engineering, Physics, Chemistry, and Geology are all provided for, not only by the appointment of professors, but by large and valuable outfits, and their full use can be at once enjoyed by students of Mining Engineering. The branches already named constitute at least four-fifths of the course that such students would need to pursue.

To any one even superficially acquainted with the loss and waste annually entailed upon the State through the lack of attainable knowledge and proper skill in the mining of coal and the manufacture of iron, it will seem to be the soundest economy and the wisest policy for it to begin immediate provision for guarding against these sources of loss. The older civilized states of the world have long protected with scrupulous care their supplies of mineral wealth. The spirit of our government, perhaps, forbids such restrictions upon individual action as are elsewhere imposed, but it must certainly be within the province of the State to provide intelligent direction for these great and growing interests—interests which, though apparently localized in area, are still common to every section of the State, and closely bound up with all its future development.

I have the honor to remain,

Very truly yours,

EDWARD ORTON,

President, and Professor of Geology.

DEPARTMENT REPORTS.

PHYSICS AND MECHANICS.

EDWARD ORTON, ESQ., *President:*

MY DEAR SIR: I beg to submit the report of the Department of Physics and Mechanics for the past year.

During the year about seventy different students have been in attendance in this department. About fifty of these have been in the Elementary or one-year's course in Physics. The remainder have been employed in the advanced or Laboratory course. A class of thirty is at present on the point of completing the first volume (the Mechanics) of the Elementary course. The present class must be considered, on the whole, as an improvement on its predecessors as to the fitness of its members for the work assigned them. Considerable difficulty is still experienced in the matter of mathematical preparation, and the work will be of an improved character when we are able to adhere strictly to the conditions of our prescribed course in that respect. In spite of this, however, the present class has done fair and creditable work, and completes the first volume of the text-book in less time than any previous class.

The work in the laboratories of this department was largely increased at the beginning of the present year. The number of students is more than double that of any previous year, and it is believed that the work has been rendered more systematic and exacting than ever before. This increase in the number of students has largely increased the labor connected with the management of this part of the work, their manipulations requiring the constant attention and oversight of the Professor. In fact, it could hardly be satisfactorily performed by one person, unassisted by text-book or guide.

To meet this want, the excellent treatise on Physical Manipulation, by Professor E. C. Pickering, of the Massachusetts Institute of Technology, has been introduced, and its use has, thus far, given good satisfaction.

In a previous report I alluded to the special difficulties which beset a Physical Laboratory in an attempt to work many students, the principal being the impossibility of having duplicate sets of expensive apparatus. It will be both desirable and necessary before long to purchase a few pieces of most frequent demand, in order to accommodate the increasing attendance. It is with great difficulty now that the work assigned can be so apportioned that a single instrument shall not be required at

the same time by two or more students. Some of these pieces can be duplicated at no very great cost, and it is earnestly hoped that the Board of Trustees, recognizing the demands of the work, will order their purchase. The equipment of last year has been considerably increased by the addition of the Bunsen photometers, the gas-holders, and the standard cubic foot lately belonging to the office of the Gas Commissioner of the State of Ohio. For this we are indebted to the kindness of Hon. William Bell, Secretary of State, into whose hands they fell on the passage of the act abolishing said office. Our thanks are also due to His Excellency, Governor R. B. Hayes, for making the Physical Laboratory the place of deposit for the very fine set of metrical standards recently furnished the State by the United States Government. It is to be regretted that all of our standards of weight and measure are not placed where they might be properly cared for and preserved.

In compliance with the expressed desire that this report should contain something more than those previously published concerning the scope and nature of the work of the student in the laboratories, a brief description of some of our methods and results is added.

The practical operations of the laboratory are carried on side by side with the study of more advanced treatises. The student who is pursuing the experimental study of any branch of the subject—let us say Optics—is encouraged and obliged to investigate the subject by the aid of special treatises, such as Schellen's Spectrum Analysis, Spottiswoode's Polarization of Light, and other similar works. The results of his work are daily compared with those obtained under similar circumstances by the various investigators whose researches are to be found in the literature of the subject. He is thus taught only to be satisfied with results of precision and permanent value.

COMPARISON OF WAVE-LENGTHS OF SPECTRAL LINES, AS MEASURED AND AS FOUND IN THE TABLES OF WATTS'S INDEX.

Measured.	From Tables.	Difference.	Measured.	From Tables.	Difference.
5604	5602	2	5045	5042	3
5458	5456	2	5024	5022	2
5525	5527	2	4992	4991	1
5427	5428	1	4948	4949	1
5355	5353	2	4919	4920	1
5303	5302	1	4905	4904	1
5215	5215	0	4876	4878	2
5082	5082	0			

As an illustration of what is daily being done in this way, the foregoing table is inserted, giving the measurements, made within a few weeks

by Mr. Newton M. Anderson, of the wave-lengths of various spectral lines, by means of a wave-length curve, constructed from observations made with the large Browning spectroscope, with a single prism in use. For comparison, a second column is given, containing the wave-lengths of the same lines, as given in Watts's Index of Spectra.

In the study of Electricity, the student consults the treatise of De La Rive, Faraday's Researches, and the more recent thorough treatises upon the subject. Particular attention is given to electric measurements, testing of batteries, lines, and the use of the galvanometer.

During the past few weeks interesting and valuable results have been obtained by students at work with the large Bunsen photometer previously mentioned. The photometers and accompanying apparatus have been put up in a room especially fitted up for photometrical purposes, and investigations have been made of the relative value of different forms of gas-burners, of petroleum oil and gas, the effect of burning gas under various pressures, etc.

Others have been engaged in studying the elasticity of wood and the metals, and the laws pertaining to their flexure and rupture. In this case, as in all cases, the student is led, whenever possible, to the production of the formulæ and equations from his own experiments, and also to subject his own and those he may get from the authorities to the closest scrutiny and severest tests. Small models of different varieties of bridges have been constructed, their strength and the stress upon the various parts computed, and the results of the calculation compared with those of actual experiment. The recent addition of a lathe to the workshop has considerably increased the facility with which students construct apparatus for special purposes. Many of the students have added to the resources of the laboratories in this way, and particular mention might be made of an absorption photometer made by Mr. W. S. Jones, a torsion apparatus by Mr. M. E. Nutting, the completion of a ruling machine by Mr. John Williams, and the construction of an accurate seconds pendulum by Messrs. Snyder and Stambaugh. The expense of many of these additions amounts to nothing; and in some instances, notably that of the very complete blow-pipe for working glass, made by Dr. C. L. Mees, of Louisville, Kentucky, while a student in the laboratory last year, the instruments could not be purchased without the outlay of a considerable sum. It is, therefore, economy for us to supply every needed facility in the way of material and tools.

Whenever fitted, students are encouraged to extend their experimental work from mere repetition into original research, and instances now and then occur in which contributions of no mean value are made. In this

connection mention might be made of an experiment undertaken by one of the students, Mr. Sidney H. Short, to determine the possibility of successfully laying a common iron telegraph wire between the last two coatings of a concrete pavement, and thus secure the necessary insulation. During the recent placing of the concrete pavement on the street in front of the College grounds, nearly a mile of wire was thus put in position, and signals have been successfully transmitted through it, with good promise of successful working. Further trial will be necessary, however, before a decisive result will be reached.

It has been our desire to render the work in the laboratories as practical in its nature as possible, and, with this end in view, students have been permitted, in several instances, to test and report upon devices and inventions of different kinds. Some of the most interesting problems set for them have been of this kind.

Finally, your attention and that of the Board of Trustees is called to what would undoubtedly be an addition to our equipment of the greatest importance. We need a machine of sufficient strength and capacity, and at the same time of delicacy and precision, with which the *strength of materials*—metals, wood, stone, and cements—could be thoroughly and satisfactorily tested. It is believed that nowhere in the State could such tests be made at the present time. It would seem that no place is more fit for such an instrument and such work than in our institution, where thorough and impartial tests could be made, and which would serve both as a means of instruction in the hands of the students, and as a source of information of considerable economic value to the State at large. It is sufficient to refer to the matter of building-stones and cements, in which the State is rich in quantity and variety, and of which a well-conducted series of tests would be of the greatest importance. In the hope that the properly constituted authorities might see fit to consider this recommendation, plans and estimates have been prepared, and the fact has been ascertained that the machine can be built in the work-shops of Columbus at a considerably less cost than elsewhere. The model proposed is that of the machine so long in use by the United States Government, and described in the report of Major Wade, of the Ordnance Department. Plans for a machine suitable to our wants have been prepared by N. K. Wade, Esq., of this city, son of Major Wade, the original designer, including the latest additions and improvements. Mr. Wade would superintend its construction, and guarantee the building of an efficient and valuable machine.

It is earnestly hoped that the benefits to be derived from this addition to our resources will receive careful consideration.

Respectfully yours, T. C. MENDENHALL.

CHEMISTRY.

EDWARD ORTON, PH.D., *President:*

MY DEAR SIR: In presenting this, the fourth annual report of the Chemical Department, I have the pleasure of announcing that the appointments of the laboratory have been largely increased, and I trust I may also add that the work accomplished has been more satisfactory than in any former year.

The number of students enrolled in the laboratory the past year was seven. Two remained but a part of the year; five continued during the year, and made good use of the time. The students in the laboratory pursued the usual course of Analytical Chemistry; the beginners devoting themselves to qualitative analysis, the more advanced working also in quantitative analysis. One of these, Mr. Curtis C. Howard, who has been with us since the opening of the College, advanced so far in his chemical studies that he was enabled to do some original work, confining himself principally to the analyzing of the limestones of this county and those adjoining it. Some of his results are interesting and important, and are presented as an appendix to this report. He will continue this work during the present year as far as the time at his disposal will permit.

Care has been taken to adapt the laboratory work, as far as is possible, to the use which the student expects to make of chemistry in after life. One of the pupils in the laboratory, who intended to become a druggist, was aided in making various researches in pharmacy, which would have been largely extended had his plans allowed his longer continuance with us.

Twenty-one students were enrolled in the class in General Chemistry; six dropped out for various causes, one failed at his final examination, and fourteen completed the required course. Frequent examinations, lasting one hour each, were held as convenience allowed, and a longer examination at the close of each term. The term questions are appended herewith, but they are by no means to be regarded as giving an adequate idea of the work actually required and done by the class.

In the work of this class an especial effort has been made to illustrate and enforce the theme by a continual reference to the application of chemistry to common life, and to the arts. We have been greatly aided in this by the collection, which has already been made, of the materials pertaining to industrial chemistry. This collection has received some additions during the year, but will every year doubtless increase more and more, and, in time, become prominent among the resources of this

department. We owe our hearty thanks to Mr. William B. Hayden and to Mr. N. K. Wade, of Columbus, for specimens relating to the manufacture of iron.

Although all was not accomplished by the class that I desired, I think that most of those who passed were well prepared for further and higher work in the science of chemistry.

Nine of this class have elected to enter upon the laboratory work, and are pursuing their work zealously and intelligently. The total number of students now in the laboratory is twelve. There are thirty-one pupils enrolled in the class in General Chemistry.

This part of my report might fitly close at this point, but I have been requested to give a more detailed account of our methods of working, and accede to this desire with as much brevity as the subject permits.

One of our students may, if he chooses, devote three or more years to the science of chemistry. All of our students who wish to obtain a degree are required to study chemistry for one year. This year, which is also the first of the three years' course, the pupil devotes to the study of general chemistry. In this class the text-book is followed, but not too closely.

It is a matter of constant endeavor to bring the subject home to the pupil. The various themes, as they arise, are first studied in the text-book and such other works as the student has at his command. He is then required to make out for the most important topics written exercises, in which a carefully methodized order is followed. Topics, too briefly considered in the text-book or difficult of comprehension, are taken up and elucidated by lectures. Most of these lectures are accompanied by a written syllabus, which the student has at his disposal for reference, and which he is allowed to copy. Three or four of these abstracts he is required to copy, and almost to memorize. They contain a summary of chemical philosophy. The blackboard is in constant use, both for synopsis of shorter topics and for the frequent reactions that occur in the course of experiment. Most of the students also take notes upon the lectures. The lectures and the text-book are illustrated by a very complete suite of experiments.

It is never forgotten that the lectures and the study of the text-book must be continually enforced by recitation and examination. The earnest attempt is made to bring the subject before the student in its logical sequence. The facts and theories of chemical philosophy are presented, explained, dwelt upon, and reviewed, as far as is thought necessary for a complete mastery of that portion of chemistry which has been selected for study. The pupil is taught to think upon the various affinities and relationships of the elements and their compounds; has his knowledge

tested by stochiometrical problems, and learns the most important applications of each substance in the arts and manufactures.

At the close of this year the student, if he is competent to pass his examination, enters the laboratory. He has learned the theory and the underlying facts of chemistry, and can use intelligently the materials which are placed at his disposal. He first learns the reactions in the dry way. In the course of this he is taught to experiment for himself in the use of the blow-pipe, making in succession a study of the phenomena presented by the use of the matrass, open tube, charcoal, charcoal with soda, cobalt solution, wood splinters, borax beads, flame colorations, oxide films on porcelain, and the confirmatory tests necessary. For each of these a set of known substances are given out, and their reactions noted. The knowledge thus acquired is tested by a set of unknown substances which the student determines by these dry processes.

This work furnishes a good basis for the study of determinative mineralogy, and is almost invaluable both for the preliminary investigation of solids and for the determination of minute residues, which are often found at the close of an investigation in the humid way.

The student then learns the reactions of the bases and acids in the humid way. Each group is presented and studied in detail. Two or three text-books are used, and the work made uniform by the use of manuscript charts, which are hung up in the laboratory for constant reference. As each group is mastered, unknown substances belonging to the group are given to the student, which he is required to determine; then mixtures, which he is taught to separate; then, as the pupil advances, mixtures of the groups already gone over, until in this way nearly a hundred substances are determined. In these studies the pupil is informed what groups of bases or of acids are to be made the objects of his search. After this a series of unknown mixtures, without any clue to their composition, are given to test the accuracy and thoroughness of his work.

This completes the course of qualitative analysis, but in the mean time the student learns the use of the spectroscope as applied to chemistry, and becomes familiarized with most of the manipulations of the laboratory. He is not allowed to lose sight of his former work in general chemistry. Although no formal reviews are given, he is encouraged and assisted in special studies, which recall matters which might otherwise be forgotten. Something has already been done in the way of making chemical preparations. From time to time the students have made in the laboratory several varieties of ethers, chloroform, absolute alcohol, and many typical salts. Hereafter a greater stress will be laid upon this

class of work, and I shall endeavor to have each student make several special studies of the more common elements, and make preparations of their compounds.

The student is also encouraged to make exhaustive studies of as many substances as his time will permit, in addition to his qualitative analysis. Those intending to become teachers will in this way go through all of the important elements; those intending to become physicians, the substances which are important in therapeutics; those intending to become farmers, manufacturers, engineers, etc., will in like manner have an opportunity of becoming familiarized with the materials with which they will have to deal in after life.

During the past year several interesting problems in pure chemistry were taken up and solved. None of these were required; that is, they were made voluntary, to be taken up when the student had leisure from his other work. This year some of these exercises will be obligatory.

When the student is well grounded in qualitative analysis, he is allowed to take up quantitative analysis. I regret that the time at the disposal of our students, after giving proper place to their other studies, is so limited that more can not be accomplished in this branch of the science. Four of our last year's students left the College before they had completed the qualitative course. Two have made several analyses, and one is nearly ready to begin this work. This evil will, however, be cured in time, and probably ought to be expected from the short time the laboratory has been opened. Every one who has studied chemistry will recognize the fact that there is practically no limit to the time which is required for a complete mastery of this ever-growing science.

The resources of the laboratory have received a great addition in the purchase of Watts's Dictionary of Chemistry. We ought also to have at least the new series of Liebig's Journal der Chemie (about fifty small volumes), which record the recent discoveries in chemistry. This journal ought also to be purchased as it appears.

We have places for sixteen students in the laboratory. The room is large enough to accommodate from eight to twelve more, and I venture to hope that before this year ends it will be manifest that one or two more desks will be required for the next class. Of course, in this sort of laboratory work there is a constant wearing out of apparatus and a constant consumption of chemicals. The stock which we now have is sufficient for our ordinary use, but will require continual replenishing. We shall soon need some minor additions to the laboratory, and among them another balance.

There is also need of improved ventilation to the laboratory. I think

that this could be very thoroughly accomplished by opening a flue into each of the buttresses in the west wing of the building, and placing in each a gas flame. A narrow balcony thrown out at the north end of the west wing would be of great service as affording a place for out-of-door work. I think that this balcony could be put up at a moderate expense, and believe the plan feasible.

In conclusion, I am happy to report that the work of the majority of the pupils in both the classes in chemistry has been cheerful, intelligent, thorough, and perhaps as extensive as ought to be expected when the time at their disposal is taken into consideration. I am certain that they deserve all praise for their uniform courtesy and attention.

Very respectfully,

SIDNEY A. NORTON.

COLUMBUS, November, 1876.

QUESTIONS FOR EXAMINATION IN CHEMISTRY.

I. AT THE CLOSE OF THE FALL TERM.

1. How do the atoms differ from each other?
2. How are the oxy-acids and oxy-salts named?
3. Give Bertholett's laws, and an illustration of each.
4. The chemical properties of chlorine?
5. The chemical properties of nitric acid?
6. The composition of the atmosphere, and the uses of each constituent?
7. Relations of carbonic anhydride to respiration. (1) When dangerous? (2) How to avoid danger?
8. Preparation of oxygen, materials, process, chemical reactions?
9. Hardness of water; define; causes of; how remedied?
10. Physical properties of ammonia?
11. How may the poisonous products of decay be avoided or removed?
12. Give the chemical reactions that take place in preparing the oxygen compounds of nitrogen.
13. What is osmosis? How does it act in relation to animal life?
14. Physical properties of carbon?

II. AT THE CLOSE OF THE WINTER TERM.

1. Resemblances and differences between Cl. Br and I?
2. Manufacture of sulphuric acid; materials; process; reactions?
3. Physical properties of phosphorus?
4. Two good tests for arsenic? Antidote for?
5. Principles upon which the spectrum analysis is based?
6. Reasons for grouping together the alkaline earths?
7. Calculate how much bichromate of potassa is required to make 100 lbs. of chrome yellow from the following formula:

$H^2O + K^2O.\ 2\ Cr\ O^3 + 2\ (Pbo.\ N^2O^5) = H^2O.\ N^2O^5 + K^2O.\ N^2O^5 + 2\ (Pbo.\ Cr\ O^3)$

8. Define atomic heat, and state what use is made of it.
9. Manufacture of pig-iron?

10. Two tests each for Cu, Fe, Ag.
11. Manufacture of white lead?
12. Uses of silver, and of its salts?
13. Define salt; how are the salts named?
14. Manufacture of sodium carbonate?

III. AT THE END OF THE YEAR.

1. Water—proof of its composition? Physical properties?
2. Nitric acid—preparation; materials; process; chemical reactions; uses of?
3. Make a full comparison of Cl. Br and I.
4. In the smelting of iron, give chemical reactions that take place in the blast-furnace.
5. Manufacture of tin plate? of galvanized iron?
6. Manufacture and purification of coal gas?
7. Manufacture of ether? Theory of chemical reactions supposed to take place?
8. Kinds of sugar? sources? manufacture?
9. Fermentation; necessary conditions; chemical changes.
10. Define alcohols, aldehydes, ethers, fatty oils, and give one example of each.
11. In making $CuOS^6$, 5 H^2O, one hundred pounds of copper were taken, how much sulphuric acid was required?
12. Give Bertholett's laws, and a good illustration of each.
13. Facts upon which the atomic theory is based? Dalton's theory.
14. Define isomerism, and give the classes of bodies usually grouped as isomeric.
15. Process of the nutrition of animals?

IV. ANALYTICAL CHEMISTRY.

The examinations in the laboratory consisted principally in the detection of unknown substances. A few questions were asked relative to modes of separation of different groups.

ANALYSES OF LIMESTONES, ETC.

The following analyses of limestones, etc., were made by Curtis C. Howard in the Chemical Laboratory of the Ohio Agricultural and Mechanical College:

Corniferous Limestone, from Quarries of Smith & Price, Columbus.

Calcic carbonate	93.28
Magnesic carbonate	2.69
Ferric and aluminic oxides	2.18
Silicious matter	1.41
	99.56

Corniferous Limestone, from same Quarries as above, but from a different layer.

Calcic carbonate	81.14
Magnesic carbonate	16.90
Aluminic and ferric oxides	1.08
Silicious matter	1.94
	100.16

Hamilton Shale, from State Quarries, Columbus.

Calcic carbonate	72.82
Magnesic carbonate	5.99
Ferric and aluminic oxides	2.80
Silicious matter	16.06
Organic matter	1.75
	99.42

Bone Bed, from Quarries of Smith & Price, Columbus.

Tricalcic phosphate	16.80
Calcic carbonate	73.24
Magnesic carbonate	4.97
Ferric oxide	2.46
Silicious matter	2.14
	99.61

The specimen selected for the analysis given above was rich in tricalcic phosphates, and is not to be taken as a fair sample of the bone bed.

Corniferous Limestone (Magnesian), from Clark's Quarries, Charloe, Paulding County, Ohio.

Calcic carbonate	57.47
Magnesic carbonate	38.24
Aluminic and ferric oxides	2.10
Silicious matter	1.47
	99.28

Corniferous Limestone, from the heavy course lying near the level of the river, Dublin, Ohio.

Calcic carbonate	55.09
Magnesic carbonate	41.07
Ferric oxide	.63
Silicious matter	1.96
Organic matter	.92
	99.67

Corniferous Limestone (Blue Limestone or Delaware Beds), from Perry Township, Franklin County, Ohio.

Calcic carbonate	57.09
Magnesic carbonate	33.14
Ferric and aluminic oxides	2.97
Silicious matter	5.33
Organic matter	.88
	99.41

Mineral Matter Contained in Water from Kansas.

	In 100 cm. Grammes.	In 1 gal. Grains.
Calcic carbonate	.0435	25.27
Magnesic carbonate	.0249	14.47
Sodic chloride	.0327	19.01
	.1011	58.75
By evaporation	.1013	

ENGLISH AND MODERN LANGUAGES

EDWARD ORTON, *President:*

DEAR SIR: I have the honor to report as follows upon the Department of English and the Modern Languages:

I.—*English.* 1. Two terms' work in English in the first year of the re-

quired course is deemed essential as a preparation for any of the studies of the College, and is required of all studying for a degree of either kind. This work begins where the ordinary school grammar ends. In the first term the aim is to extend the students' grammatical knowledge, and to explain the present facts and usages of the language by showing their origin and growth. The chief characteristics of Anglo-Saxon and Norman French, and the manner and results of their fusion, are given as simply but as thoroughly as may be. This is done from the conviction that nothing is well known unless its antecedents and earlier forms are known. In the second term this grammatical study is applied to the textual study of specimens by authors from Spenser to the present time. The leading facts of the personal and literary lives of these authors and their principal cotemporaries are discussed, and the forming and directing of a love of good reading kept in view. During both terms the student is required to apply his theoretical gains to practice in composition.

2. The elective course in the school of English includes two years of recitations and lectures. It is designed for maturer students, reaches further, and goes deeper than the course above described. It is designed to help the student, first, to a philological knowledge of his mother tongue, its resources, both grammatical and lexical, and its relationships to other languages; second, to the intelligent and sympathetic study of English literature of the various periods; and third, to the acquirement of such linguistic, rhetorical, and logical principles and habits as shall enable him to put good thinking into good English, written and oral. To attain the two last ends, the attainment of the first is the shortest and surest, if not the only way.

And certainly the attainment of the first includes and necessitates the study of Anglo-Saxon. Not its insertion, but its omission, in a comprehensive English course should excite surprise. Says Prof. March—no less eminent as a teacher than philologist—"It seems to be agreed that every English scholar ought to have some scholarly knowledge of the English language. Then every English scholar ought to study Anglo-Saxon. * * At least a daily lesson for one term ought to be given to this study in each of our colleges;" which is precisely what Thomas Jefferson insisted upon and provided for in the founding of the University of Virginia. Says the Hon George P. Marsh: "This study (*i. e.*, of English) can not be pursued with success upon the basis of the modern forms of the language." "To the study of the literature of the age of Elizabeth, the goodliest heritage of every educated Englishman and Anglo-American, a respectable knowledge of the previous language and literature from the age of Alfred must be brought before it can be pursued with any thing

more than a half success; and the earnest student * * who would grow up to the fullest appreciation and enjoyment of the great masterpieces of English literature must seek out the ancient mother," says Prof. Corson. In accordance, therefore, with the precepts of teachers like these, and with the practice of the best schools and colleges of America and England, the study of the language and literature of the Anglo-Saxon and early English periods finds due place in our course. The grammar is studied, and texts of representative authors are read and commented upon precisely as in the case of Greek and Latin. Frequent lectures are given throughout the year. The text-book work of this first year covers the period to Langlande and Chaucer, inclusive; the lectures on literature to Shakspere, inclusive. I am indebted to Prof. Mathew and to Mr. Howald, a student in his and my departments, for the lithographing of maps that give my classes valuable aid in following my lectures upon the intricate history of England previous to the Conquest.

Of the second year, Rhetoric occupies the first term. Recitations upon the text-book are supplemented by lectures, and applied in illustration and analysis of classic English.

In the second term Logic is studied; not as a barren statement of abstract principles, but with constant applications, and with due reference to the special logic of the several sciences.

Intrinsically and because of its connection with ethnology, history, and literature, few branches of study are of more importance and interest than Comparative Philology. The admirable "Families of Speech" of Prof. Farrar is the text-book of the third term, and gives a good outline of the subject. Because this topic is best pursued in the light of the rest of the course, and by students of mature mind, it is placed at the end of the course. Lectures on the post-Elizabethan literature continue throughout the year.

In addition to the studies and exercises of my own department, exercises in composition and original speeches are held once a week, in which all the students of the College take part in turn.

II. *The Modern Languages.*—The courses in French and German are elective. Each includes two years. In view of the fact that mental training is a chief aim of every part of a college course; that for purposes of literary culture the main thing a college can give is the easy reading and accurate understanding of the masterpieces of the language studied; and that in an institution in which the sciences are so prominent as they are with us, it is of the utmost importance that the ability to use foreign text-books and works of reference be acquired as soon as possible, the so-called "Conversational Method" is not employed, and

"learning to speak" French and German is an incident rather than an aim of the course. This is of purpose, and according to the best college usage and authority. I believe, too, that the careful and continuous use of the grammar, lexicon, and well-chosen text is the only sure and usually shortest road to accurate and fluent speech. Where small classes with little else to do can spend several hours each day with the teacher, a different method will often succeed; but in a college, and to meet the ends of a college, more and better results are secured by the grammatical and literary method. This is the nearly unanimous view of college men, and is well stated by Prof. Whitney of Yale: "In our schools and colleges this (*i. e.*, the gaining of conversational ability) is for the most part impracticable. Their circumstances and methods of instruction render translation and construction the means by which the most useful knowledge and the best discipline can be gained." Give the student an accurate knowledge of the inflections and syntax of a foreign language; make him master of a full and idiomatic vocabulary of its words; let the reading of varied and well-selected texts teach him the peculiarities alike of the thought and rhythm of the speech of the men whose works he studies, and accustom him to the oral and written rendering of the foreign text into English, and of English texts into foreign, and he will be no longer helpless in presence of a foreign poem or book on chemistry, and learning to speak, and speak well, will be easily acquired, and when acquired, remembered.

In both the French and German course the student attends mainly to grammatical doctrine and word for word versions and exercises at first, and to the literary characteristics and contents of what he reads as he progresses. In the second year courses of lectures upon the respective literatures are delivered.

In both schools—that of English and that of Modern Languages—written examinations, covering as thoroughly as possible the ground gone over, are made from time to time, and always at the end of each term.

From September, 1875, I have been zealously and intelligibly assisted by Miss Williams. I believe the department to be in good condition.

Believe me to be yours, with great respect,

JOSEPH MILLIKIN, *Professor*

AGRICULTURE, VETERINARY MEDICINE, AND BOTANY.

EDWARD ORTON, *President:*

DEAR SIR: The following is a statement, somewhat in detail, of the studies pursued by the classes in Agriculture, Veterinary Medicine, and Botany for the College year ending June, 1876:

CLASS IN AGRICULTURE—FIRST YEAR.

First Term.—Soils: their formation, composition, classification, adaptations, and amelioration.

Pastures and Meadows: character and value of different grasses, clovers and other forage plants; value of grass and hay crops of Ohio.

Field Crops: corn, wheat, oats, barley, rye, potatoes, peas, beans, turnips, beets, flax, and hemp; facts and experiments illustrating their cultivation.

Fertilizers: animal manures, marl, gypsum, superphosphate, guano, city sewage.

Second Term.—Work of the Farm—Tillage: plowing, harrowing, rolling, drilling, sowing, planting, etc.

Drainage: stone drains, tile drains, mole drains; leveling instruments, draining tools, and the manufacture of drain tiles.

Irrigation: its value and methods, distribution of sewage.

Farm Roads: their direction, grade, form, and materials.

Fences: material, construction, and cost.

Rural Architecture: farm-houses, barns, stables, sheds, etc.

Farm Machinery: plows, harrows, cultivators, rollers, drills and planters, mowers, reapers, threshers, pumps, wind-mills, etc.

Third Term.—Fruit, Hedges, Forests, etc.—Orchards: soil, preparation and exposure; apples, pears, peaches, cherries, small fruits; planting, budding, grafting.

Vineyards: soil and preparation, influence of climate, varieties, and culture.

Gardens: market gardening, home gardens, ornamental and landscape gardening.

Hedges: hedge plants, planting, and trimming; cost and value compared with fences.

Forestry: value of timber, influence of forests on the natural drainage of a country, tree-planting.

These subjects, as far as practicable, are illustrated on the College farm. Besides fencing, road-making, and other improvements, a large amount

of tile-draining was done, resulting in changing a useless swamp into tillable land. Upwards of three hundred dollars were paid to students during the year for labor done on the farm. The classes in Agriculture do not represent the amount of time devoted to this subject. Chemistry, botany, and zoology are essential to an improved agriculture, and in these classes are half the entire number of our students.

SECOND YEAR.

First Term.—Domestic Animals—Horses: natural history of the horse, varieties, breeding, and training.

Cattle: their natural history, varieties, special adaptations, breeding, and feeding; dairy management.

Sheep: natural history and varieties, mutton, and wool-growing.

Swine, poultry, bees, etc.

Second Term.—Veterinary Medicine—General Principles: history of veterinary medicine and of veterinary schools.

Nature of Disease: its primary elements, etc.

Causes of Disease: predisposing and exciting symptoms of disease; how these manifestations enable one to determine the nature of the ailment, and to discriminate between different diseased conditions.

Classification of Diseases: nomenclature of disease.

Principles of Treatment: what may be attempted, and what should not; remedial agents, and their effects.

Animal Hygiene: how to preserve health, public police, quarantine regulations.

Third Term.—Veterinary Medicine—Particular Diseases and Operations: epizoötics and contagious diseases, parasitic diseases and animal and vegetable parasites, diseases of the respiratory organs, diseases of the organs of the circulation, diseases of the digestive system, diseases of the nervous system, diseases of the locomotive apparatus.

Appropriate treatment for these diseases was explained; also, such surgical operations as animals require are, as far as possible, made before the class. In the course of the year, frequent opportunity was afforded for the examination of such diseases as hog cholera, Texas fever, etc. Reports of these examinations have, from time to time, been given to the public through agricultural periodicals. In addition to the facilities heretofore furnished for veterinary studies, negotiations are now in progress to secure for the College a valuable pathological cabinet, which probably will soon be in place, and available. It may not be improper to add that the work done by this class is only a part of what is done in this institution for veterinary science. The anatomy of domestic animals

and their physiology are thoroughly taught by the Professor of Zoology, who also provides ample means for dissections. The number of students in these classes during the year was fourteen.

BOTANY—FIRST YEAR.

Second Term.—Structural Botany was commenced this term by a class of twenty-five, most of whom were new students, who found in this branch their introduction to scientific studies. The lessons were, therefore, necessarily elementary, beginning with the anatomy of plants, their roots, stem, leaves, flowers, fruit, and seeds; their various forms and functions and intimate structure as revealed by the microscope. Such processes as germination, foliation, inflorescence, and fertilization were studied in their order, with the development, composition, and uses of such vegetable products as gum, starch, sugar, oils, resins, wood, and fibre for textile fabrics.

Third Term.—Systematic Botany occupied the class through this term. Early discoveries and attempts at classification were learned; then the classification and nomenclature of Linnæus, and finally the natural system. The characteristics of the natural orders were studied in connection with the daily analysis of the plants of the surrounding country and their comparison with those in the herbarium.

To many of the class Botany was evidently an attractive and profitable study; to others it has appeared technical and difficult; but to all it must have been of service as a means of discipline by the habits of observation it helps to develop, and not less from the example it affords of beautiful and orderly arrangement.

Very truly yours, N. S. Townshend.

DEPARTMENT OF MATHEMATICS AND ENGINEERING.

Edward Orton, Ph.D., *President:*

Sir: The work in this department for the past year has been done in accordance with the published schedule of studies. The classes in Algebra, Plane and Spherical Trigonometry, Plane and Solid Geometry, Surveying, Navigation, Analytical Geometry, Astronomy, Shades and Shadows, Perspective Drawing, Engineering, etc., accomplished the usual amount of work, and in a manner entirely satisfactory. The classes have varied in numbers, from two or three to twenty-five or thirty, usually approaching the large numbers, and in one case exceeding forty. The whole number of students in the mathematical course for the year is ninety; in civil engineering, twenty-seven.

It is unnecessary to give a mere detail of the work in pure mathematics. In applied mathematics, the classes in Surveying and Engineering, besides the study of the theory, and in addition thereto, have executed field-work in the various divisions of these subjects. The work has consisted in surveying the farm, and the fields into which it is divided, running lines, surveying by offsets, taking levels from place to place, using the plane table, setting out curves of known radii, tracing the curves and afterwards determining the radii, etc. This latter work has been done in the several ways used by engineers, viz., with a transit and chain, and with two transits without the chain. Profile work for levels is executed, and practice is given in the methods of fixing the grades of railways, and in setting the side-stakes for embankment or excavation. It is the intention also that each class shall determine the variation of the needle by observations of the pole-star.

In all of the above mentioned kinds of work it is to be understood that the students are taught the use and the adjustments of the transits, the level, the plane table, and, in fine, of all the instruments employed in execution of the various kinds of work pertaining to the studies.

It is not deemed necessary to enter more fully into a statement of the work done in this department. Suffice it to say, in addition, that some of the students have made and tested models of bridges of different kinds; and that it is the intention when a work-shop, and tools are furnished, *to construct all the models of every kind which may be wanted in the department*, and to do the work as occasion may require.

The appliances for giving full and thorough instruction in Surveying and Engineering are of the first order, second to none in the State, and not far behind the best in the country. It is proposed to give young men as good a training in these subjects as can be had elsewhere.

And that there may be nothing wanting to the fullest equipment, I state that it would add not a little to the interest and the efficiency of the department if it could be furnished with a solar compass and a zenith telescope.

Very respectfully,

November 15, 1876. R. W. McFarland.

ZOOLOGY.

Columbus, Ohio, *November* 15, 1876.

Edward Orton, Ph.D., *President:*

Dear Sir: I have the honor to submit the following report of the department of Zoölogy and Comparative Anatomy and Physiology.

The equipment of the department continues to be increased by addi-

tions to its supply of material and apparatus for teaching and study. The material added has been chiefly in the form of collections of animals made in different parts of the State by myself, and by students in the department. The chief addition to the teaching apparatus of the department has been the completion of the supply of microscopes for the use of students in the laboratory. We have now available for daily use ten stands, representing as many of the leading American and European makers, viz., Zentmayer, Grunow, Tolles, Queen & Co., Ross, Beck, Crouch, Browning, Murray & Heath, and Hartnack; and objectives to the number of twenty or more, giving powers up to four thousand diameters, by Tolles, Grunow, Ross, Beck, Gundlach, Hartnack, and others. Few colleges are now as well prepared as this with the means for systematic instruction to all who desire it in the use of this instrument, the value of which, not only to the investigator or the naturalist, but to the physician, the manufacturer, or the farmer, is every day becoming more evident.

This, however, is the only provision of apparatus made, as yet, for this department. There still remains a pressing need of apparatus suited to the work of practical instruction in, and study of, physiology. I feel constrained to urge, as I have done in a former report, the importance of supplying this want. The College is sought more and more each year by young men who are looking towards the practice of medicine, and who wisely seek a thorough scientific education as a preliminary to their professional studies. To such, the importance of acquiring as full and practical knowledge of physiology as possible is hardly to be overestimated. A few hundred dollars, well spent, would add greatly to the serviceability of the College to all such students.

I would like, also, to renew the suggestion made last year, that a sum, definite, even though small, be set apart, the income of which shall be available for the current expenses of the department, subject to the approval of the proper authorities.

The State and economical collections begun must necessarily be of slow growth at best, and there frequently occur opportunities which could be improved so as to make valuable additions to them at moderate expense, provided there was a fund that could be relied on for that purpose. There is also a constant consumption of material going on in the laboratory, which should be met with as constant a supply.

The material now available for the use of students in this department may be briefly stated to consist of upwards of three thousand specimens and preparations, illustrating nearly every class in the animal kingdom, and every order in each of the more important classes. This material includes skeletons, both mounted and disarticulated, stuffed animals, dry

and alcoholic specimens, dissections in alcohol, models, etc., etc. The large majority of the skeletons, and many of the stuffed specimens, are the superior work of Ward, of Rochester. The larger part of this material, as the above description would indicate, is calculated to contribute, chiefly, to the first of the two collections mentioned in a previous report, as expressing my views as to the needs of this department in the way of material, viz., the synoptical collection intended for the systematic representation of the animal kingdom as a whole.

The second of these proposed collections, viz., the one intended to represent, as fully as possible, the zoölogy of the State of Ohio, and especially the animals that are noxious or beneficial to man, already contains much valuable material. Upwards of a thousand specimens, chiefly entomological, have been collected by myself, and every opportunity for increasing it, consistent with the time and means at my disposal, will be improved. The department is also under special obligations to Joseph Sullivant, Esq., Secretary of the Board of Trustees, for the loan of a fine collection of shells, and for frequent collections made by him in its behalf; to Professor William Colvin, of this institution, for a full series of the land and fresh-water shells of southern Ohio; to Mr. A. Freed, of Lancaster, for a large and varied collection of the animals of Fairfield county; to Mr. William Deshler, of this city, for the gift of two cases of stuffed birds, chiefly of this vicinity; and to a number of students in this College for collections made at their homes during the past year.

In this connection I would say that it is proposed to make this collection as full and complete as possible; and to that end the friends of the College, in every county of the State, are earnestly requested to make for it full collections of all their native animals, including even those that appear to them most common or unimportant. When necessary, expenses incurred in collecting or preserving specimens will be paid.

A brief statement of the work done or doing in the department will naturally follow this statement of its condition. The advanced classes of this department do not vary much in size, or in the work done, from year to year. The class in Physiology of last year is replaced this year by one in Anatomy, which alternates with it, in which Huxley's Anatomy of the Vertebrates is used as a text-book, accompanying the work in the laboratory and dissecting-room. The most interest, however, attaches to the elementary classes, one of which, that in Zoölogy, I have heretofore regarded, largely, as an experiment. The class in Physiology, in which this year over forty names are enrolled, composed as it is, in great measure, of the newest students in the College, demands a large share of my attention and study. I may say that the results are in a high degree satis-

factory. The idea of teaching physiology to young students is, however, not new; but I believe that it will be found that this College is the first one in which students but a single year advanced in college work have been given systematic laboratory training in zoölogy. For two years I have pursued that method with classes of twenty young men and women, and with gratifying success. I have had to feel my way, step by step, to find answers for the questions *what*, *how much*, and *how* shall I teach? but the results already obtained are sufficient to remove from my mind any doubts previously entertained as to the advisability of introducing this subject at this point in the College course, and to convince me that the method pursued is in the main the right one, while I am encouraged to hope that I shall be able, in the future, to make this study still more valuable, both as a source of information and as a means of mental discipline to the student.

A few words may be said in this connection as to the plan on which the work of this department is organized. Elementary Physiology is taught in the first term of the first year of the College. The object of this is simply to give the student as soon as possible an outline at least of the laws which govern sound bodily health, and thus to enable him to use his powers to the best advantage throughout his future life. For this work the admirable text-book of Dr. Cleland is used. In the second year of the College course an opportunity is afforded for the study of Elementary Zoölogy, in order, on the one hand to familiarize the student with the characters which separate the larger groups of the animal kingdom from each other, and on the other hand to give him some training in the systematic use of his powers of observation and comparison. To accomplish this latter result the laboratory method of instruction is chiefly used, as already stated, supplemented only by lectures.

This is the extent to which the department is represented in the required or preliminary course of the College work. To those who present themselves for advanced work, a choice is offered from the following four courses of one year each, any two of which will be regarded as a two-years' course in this department, according to the plan of work adopted by the College. These courses are chosen to meet the wants either of the general student or of those seeking information or training of special value in some particular calling, such as farming, the practice of medicine, etc., and are as follows: Veterinary Anatomy, designed especially for the benefit of agricultural students, and intended to fit them for the lectures upon the medical and surgical treatment of animals given in the department of Agriculture, and pursued principally in the dissecting-room by repeated dissections of the domestic animals, Chauveau's

treatise being chiefly used as a guide; Vertebrate Anatomy and Morphology, intended particularly for students contemplating the practice of medicine, or for the general student, pursued by dissection of representatives of as many of the leading groups of this sub-kingdom as can be obtained, and a careful comparison of their structure, guided by the works of reference contained in the College library or my own, Huxley's Anatomy of Vertebrates being used as a hand-book; Invertebrate Zoölogy, in which the invertebrate animals, or their leading representatives, are submitted in the laboratory to careful examination and dissection by the student, particular attention being paid to those groups which are particularly beneficial or obnoxious to man; and Physiology, pursued as an advanced study for the benefit of either class of students, partly by microscopic examination of the tissues of animals, but chiefly, at present, by the use of a text-book (Flint's). In the first three of these courses, as will be seen, books are used only as aids to individual work, and in this manner one of the great benefits of all scientific education is largely obtained, namely, the development of the student's own powers of observation, reasoning, and judgment. In the fourth we are limited as yet only to a choice of text-books from which to draw information at second-hand; but, as already suggested, I hope that there will soon be provision for the direct study of nature in this, as in other courses.

Some of the books suggested in my report of last year as of special value to students, have been purchased, making the beginning of a department library of reference for the student. It is to be hoped that it will increase rapidly.

During the past year I have accompanied the Professor of Agriculture in a number of investigations whose object was to determine, if possible, the nature, cause, and treatment of the disease or diseases known as hog cholera. The results of these investigations, when completed, will find their expression in his report rather than in mine. The whole number of students in this department for the year is seventy-six.

All of which is respectfully submitted.

ALBERT H. TUTTLE, *Professor.*

POLITICAL ECONOMY, CIVIL POLITY, AND ACCOUNTS.

POLITICAL ECONOMY.

COLUMBUS, OHIO, *November* 21, 1876.

EDWARD ORTON, PH.D., *President:*

DEAR SIR: From the fact that in the common and high schools generally throughout the country there is rarely, if ever, any instruction

given on this subject, students enter upon the study of it in colleges without any previous elementary instruction. The course of study adopted must of necessity supply the definitions and elementary information. An elementary text-book for the use of students has been used, supplemented with written and oral lectures, elaborating the more advanced principles and theories of the science which I have stated in formal propositions and placed on the blackboards to be copied by students into their note-books. The study of the different divisions of the subjects has been pursued in the same order as outlined in the programme of the department in the circular and catalogue of the institution for the present year. The students have been referred for further investigations to those parts of the works of the authors now in the College library that more fully treat each particular subject as it arises in the course. This manner of teaching has been followed at the close of each division of the subject by an examination conducted by questions placed upon the blackboards, and requiring answers written in the class in the presence of the professor, testing the accuracy and extent of the knowledge which each student has attained. The number of students in attendance in this class is thirteen. The following, taken from among the questions submitted, will convey some idea of the work:

What is the difference between utility and value? Give examples.

What distinction is to be observed between wealth and capital?

State the services which the industrial forces, land, labor, and capital, render in the production of wealth.

What is productive labor? Give examples.

What is unproductive labor? Give examples.

Is the labor of the street organ-grinder and that of his monkey productive or unproductive labor? Give your reasons.

Is the labor of the diamond-cutter productive or unproductive labor? Why?

What are the seven conditions by which the efficiency of labor is promoted?

State the twelve advantages arising from the division of employments. State the limits to the advantageous division of employments. State also the disadvantages to the workmen of the division of employments.

What was the "Bullion system"?

Explain that system of regulation, of commerce and production, by government known as the "Mercantile system." State the five methods by which its aim was endeavored to be accomplished.

Is it beneficial to the laboring classes when there are many rich men in a community? Why?

Why is the capital of a country more productive when owned by a great many small capitalists than by a few large ones?

Can there be too much capital in a country? Why?

Can there be an over-production of wealth? Why?

Is wealth consumed in luxuries capital? Why?

Why is it erroneous to suppose that luxurious expenditure is good for trade?

Would a great fire that gave work to the building trades and to laborers be a benefit to the working population generally? Why?

Is the destruction or unproductive consumption of capital an injury or a benefit to the laboring classes? Why?

Would a great European war be a benefit or an injury to the producing classes in America? Give reasons for your answer.

Was the American civil war a benefit or an injury to the producing classes in Europe? State facts in proof.

How is the condition of the laboring classes affected by the conversion of circulating capital into fixed capital? Give examples.

Why does capital accumulate more rapidly in America than in British India or in Mexico? State all the reasons you know.

Why has the United States received such large imports of foreign capital?

Why is the ability of the governments of the United States, Great Britain, or France to borrow money greater than that of Austria, Russia, or Spain? State all the reasons you know.

Are the gases escaped from the muzzle of a canon capital? Why?

Are the loans which have been made to a government and spent in carrying on a war capital? State the reasons.

Are the premiums paid on a life insurance policy or money at interest in a bank capital? Why?

Would it be more advantageous to the laboring classes for the government to carry on a war by means obtained by a loan or by a tax? Give reasons.

Why does a strike of workmen for wages generally fail in a falling market for their product? and why does it generally succeed on a rising market?

What is the distinction between value and price?

Can there be a general rise of values? Why?

Can there be a general rise of prices?

Is a country richer if the prices of all commodities should rise? Give your reasons.

What would be the effect on values if the money circulating in a country were suddenly doubled, while the number of people and quantity of trade remained the same as before the increase?

What would be the effect on prices if the money circulating in any country were suddenly diminished one half, the number of people and quantity of trade remaining the same as before the diminution? And what would be the effect on all who had made contracts to pay money, or who were in debt?

What is "demand," and what is "supply"?

Explain the equation of supply and demand.

Give an explanation of how price controls the equation of supply and demand.

Show how market value always tends to approach the cost of production.

State Adam Smith's four canons of taxation.

Under what canon is an income tax classed, and why is an income tax the most fit of all classes of taxes?

State the reasons for the fitness and justice of a personal tax.

Should taxes be levied on raw materials or on finished products? Why?

Why is the non-observance of the second canon injurious to trade?

Show how a violation of the third canon incommodes and injures the individual citizen without promoting the revenue.

Show how a violation of the fourth canon interferes with the ordinary and natural monetary circulation.

State the circumstances which increase the productive powers of the land.

What difference is there in the influence on the productiveness of the land between cultivation by peasant proprietors and peasant tenants? And why should there be a difference?

Show how, under a system of farming by small proprietors, machinery may be as effectively applied as under a system where land is cultivated in large farms.

What class of products are most successfully produced when the land is cultivated in small farms? and why they are most successfully produced when the land is divided into small farms?

How does the ownership of land of a country in large or small farms affect the moral and social conditions and industrial character of the population?

What effect has the recent modification of the land laws of Ireland had upon the emigration of the Irish people? and why should such be the effect?

Whence arose the extraordinary ability of the French people to pay off the indemnity to Germany for the war of 1870-71?

CIVIL POLITY.

In the absence of a suitable text-book for the course of instruction in civil polity, the instruction has been conducted by means of lectures—oral and written—on the topics indicated in the programme. During the first year the lectures embraced the discussion of the following topics:

FIRST TERM.—*The Theory of Rights.*

The laws of Nature. Their principles found in the human constitution, and man's relation to external nature. The origin of laws. Suffering, the indication of violated laws. The office and ministry of pain.

Of rights, and their origin in man's nature and relations.

The right to life.

The right to personal liberty.

The right of opinion and its free expression; mental liberty.

The right of property.

The right to land and to the raw materials supplied by Nature, and the dependent right to labor. The history of the agrarian institutions of the ancient Hebrews, Romans, Greeks, Irish, English, Russians, Hindoos, and of the common ownership by the village community of all the ancient Aryan peoples shown by the recent researches.

The right of property in ideas.

The right of property in character.

The rights of the affections and sentiments.

The rights of women. The history of woman's social and political relations in different states of society and among the different historical nations.

The rights of minors and those under guardianship.

SECOND TERM.—*Political Rights.*

Necessity of government.

The citizen the principal, the State the agent.

The elective franchise; who should exercise it; the history of the conditions and

qualifications imposed by the free states of antiquity, of the middle ages, and of modern times.

The proper function of government, the protection of rights: this the true limit of its agency.

The rights of majorities; the rights of minorities.

Laws should be general, equal, and impartial in their scope and application.

Privileged classes.

Eligibility to office.

THIRD TERM.—*Constitution of Government.*

The popular sovereignty delegated by written instruments.

Necessity of written instruments, even in pure democracy.

More essential where government is by representatives, elected or appointed.

Constitution subject to change. The people can not be bound perpetually to any form.

Distribution of the powers of government by constitution.

Modes of appointment of officers to administer the several powers.

Tendency of governments to accretion of power in official administrators.

Necessity of exact definition of powers, and their limitations.

The constitution should be replete with prohibitions of the exercise of power by State and municipal authority, and with guaranties against oppression and injury by State as by individuals.

Conformity of legislation to moral and natural law.

Offenses defined by the laws.

Remedies that can be applied by government.

Punishments.

The preparation of the above course of instruction of the first year, in civil polity, has been a labor of some magnitude, but one not ungrateful.

The subjects—except for the first term—of the second year are tolerably well supplied in text-books adapted to the class-room work.

SCIENCE OF ACCOUNTS.

methods of instruction pursued in this department were stated at some length in my last report. The aim has been to make the work as thoroughly practical as possible, and to accomplish as much for the student, in preparing to be a practical accountant, with the least expenditure of time and labor possible. I have furnished the student with a statement of the methods and principles of the science of keeping accounts by double entry in a brief series of practical rules, concisely stated, and containing the directions and applications of the principles of double entry to every possible form of business transaction. These principles are illustrated, beginning with short and easy examples, in sets of books, followed by others more complex and difficult, showing how to open and close books, make balance-sheets, etc.

The time allotted to this subject during last year was too short to accomplish all the work of the programme. The work prescribed for the first and second terms was done, but the work of the third term was only done in part. Only a few of the more apt did any work in bank book-keeping and railroad book-keeping, and the modern methods of city or public accounts were not reached. The uses and forms of vouchers, checks, drafts, bills of exchange, letters of credit, and notes of all kinds were explained, and the general principles and properties appertaining to them taught and fully illustrated.

During the second term the application of the principles of double-entry book-keeping to the operations of the farm was illustrated by a set of books showing the manner of keeping the accounts with the different crops usually cultivated on farms in this latitude, the costs and proceeds of the crop in each field, with the gain or loss on each. Also the costs and proceeds of cattle, of hogs, and dairy, and the gain or loss on each. Having been impressed with the great importance to the agricultural interests of the State of the introduction and use by the farmers of the State of an accurate and systematic method of keeping an account with each of their several operations, so that they can inform themselves accurately as to the comparative profit of the several crops taken off their land, and the definite value of returns for their labor and capital bestowed upon each crop and each separate division of their land by the several methods of treatment, I saw that the application of the double-entry system of account-keeping was the one best adapted to the requirements. It has been stated by authors of books on this system of keeping accounts, and also by teachers of it, that it is not suited to the business of the farmer; but in this course it has been shown that it is admirably suited to the business of the agriculturist, for it is capable of determining, as no other instrumentality can, from the results it supplies, the character of agricultural industry most profitably to be pursued in a given region and on any given character of soil. The results to be obtained by ten years of accurate accounting in the agricultural industry of the State would be of a value so great in directing in the pursuit of that kind of husbandry which an average of years would show to be the most productive use of the land, that we can place no estimate on its magnitude. I am not aware that in any other place this application of the science of double-entry book-keeping is taught. The number of students attending in this department is nine.

Yours, most respectfully,

WILLIAM COLVIN,

Professor of Political Economy, Civil Polity, and Science of Accounts.

MILITARY SCIENCE AND TACTICS.

COLUMBUS, November, 1876.

EDWARD ORTON, PH.D., *President:*

SIR: I have the honor to submit to you the following report of the departments under my charge.

I. MILITARY SCIENCE AND TACTICS.

Though it has been but a short time since I undertook the work of instructing in the military drill, so much interest has been evinced by the young men, one hundred in number, as enables me to say, with great pleasure and satisfaction, that the progress made by them has exceeded my expectations. They have nearly mastered the squad drill, and have already begun to familiarize themselves with company movements in the school of the company.

Steps have been taken to obtain from the United States Government, agreeably to existing laws, all necessary arms and accoutrements, and as soon as they arrive instruction in the manual of arms and bayonet exercises will begin. This will consume the winter months. In the meantime, also, it is hoped that the students will all provide themselves with the uniform adopted by the Faculty. It is almost needless to dwell upon the importance of this matter. A young gentleman must look like a soldier before he can be expected to act like one. Even the "plebes" at the West Point Academy are looked upon with some degree of respect by the advanced classes after they have donned their first suit of gray.

All being in readiness by next spring and the opening of good weather, it is my intention to organize the students into a battalion of two or more companies. The battalion and company officers and the non-commissioned officers will be selected from the students distinguished for soldierly qualities; the highest offices being given, as a rule, to the students longest connected with the College.

These positions, being honorable distinctions, will only be tenable during good behavior and a strict performance of duty. The battalion organization is that adopted by the United States Government for the cadets at the Military Academy. It is undoubtedly the best system for the study of tactics, and is also, more thoroughly than any other, calculated to acquaint the soldier with the discipline and duties of the military profession.

The practical instruction will also include the school of the piece in artillery tactics, and target practice.

At a recent convention of army officers on college duty, one of the resolutions passed is as follows:

Resolved, That as an incentive to the students under the instruction of army officers, and as a measure of public interest, it is recommended that each of the colleges select, upon the representations of such officer, and submit to the Government for appointment as second lieutenant in the regular army, one graduate yearly.

But even without any such incentive, will not the young men receiving the gift of their education at the hands of a generous government be proud of an opportunity to fit themselves for its service and defense when appealed to by their country in a day of necessity?

I believe, furthermore, that every good citizen of this State will look with favor upon his son's acquiring, while in the pursuit of a liberal education, a knowledge also of the art of war, so that in any emergency he may stand in readiness to do his full duty to his country.

That millenium wherein Utopian dreams of perpetual peace and harmony are to be realities, we all know has not yet arrived. It becomes us, then, in time of peace to prepare for war, if, in the hour of danger, we would be sparing of the precious life-blood of the best and bravest of our people. Washington was so deeply impressed with the importance of this subject, that in his last annual message to Congress he says: "Whatever arguments may be drawn from practical examples superficially viewed, a thorough examination of the subject will evince that the art of war is both comprehensive and complicated; that it demands much previous study, and that the possession of it in its most improved and perfected state is always of great moment to the security of a nation."

And, indeed, an eminent military writer has justly exclaimed that "misfortune will surely fall upon the land where the wealth of the tax-gatherer or the greedy gambler in stocks stands, in public estimation, above the uniform of the brave man who sacrifices his health, fortune, or life to the defense of his country."

In addition to the military drill, which takes place four times a week, theoretical instruction in military science and tactics is given weekly. This study is optional with the students; my class in it numbers twenty-six, and is doing well. It is my purpose to have this course of instruction extend through two years. During the first year infantry tactics, ceremonies, and army regulations will be taught. The second-year class will then receive instruction, by lecture, on the following subjects:

1. Military law, and the practices of courts martial.
2. International law, with special reference to the customs and usages of modern warfare.

3. The science of artillery, and the uses of the three arms, infantry, artillery, and cavalry.

4. Military engineering, including field fortifications, the construction of mines, galleries, siege batteries, gradual approaches, and parallels.

5. The science of war, or strategy.

II. MATHEMATICS.

In this department, the subjects of trigonometry (plane and spherical), analytical geometry, and the differential and integral calculus, were assigned to me at the beginning of this term. During the present college year the last catalogue will be followed; but in future the fact that an additional professor has been appointed in the department of pure mathematics renders it possible to secure an expansion of this course of study. I, therefore, propose the following arrangement:

Trigonometry (plane and spherical) to be placed in the third term of the second-year required course.

The mathematical course in the school of exact sciences will then comprise,

First Term.—Analytical Geometry of two dimensions.

Second Term.—Analytical Geometry of three dimensions, and the differential calculus, as far as to include "maxima and minima."

Third Term.—The remainder of the differential calculus; and the integral calculus.

I am, sir, with great esteem, respectfully, yours,

LUIGI LOMIA,

1st Lieut. 5th U. S. Artil'y, Prof. Military Science and Tactics, and Adjunct Prof. Mathematics.

LATIN AND GREEK, AND LIBRARY.

COLUMBUS, OHIO, *October* 30, 1876.

EDWARD ORTON, PH.D., *President:*

DEAR SIR: I have the honor to herewith transmit to you my first annual report for the department of Latin and Greek.

In the last College catalogue is presented an outline of the course of study in this department followed by my predecessor, Professor J. H. Wright; and to this course, as judiciously selected, I have thus far adhered, with little or no deviation. Having been connected with the College so short a time, my report is, of necessity, a prospective one, or, at best, only a report of progress in a limited period. I am, however, able to say that the number of students pursuing Latin and Greek represent a slight increase over the first term of the year 1875–6, as will be seen by the following table:

COLLEGE CLASSES.

1875–6. FIRST TERM.

Latin and Greek—First year's class	12
Latin and Greek—Second year's class	5
Total	17

1876–7. FIRST TERM.

Latin—First year's class	6	
Second year's class	5	
		11
Greek—First year's class	6	
Second year's class	3	
		9
Total		20

Commendable progress has been made in the various classes thus far, and a satisfactory degree of interest shown in the studies pursued. I am glad to say that the department is stocked with a creditable supply of wall-maps and charts, illustrative of the geography of Greece and Rome, without which all classical study is necessarily partial and crippled.

At the instance of my predecessor, a much-needed addition has been made to the College library during the past vacation, in the shape of a full set of Smith's Classical Dictionaries, including three volumes of Greek and Roman biography and mythology, two volumes of Greek and Roman geography, and one volume of Greek and Roman antiquities; also, Teuffel's History of Roman Literature, and a complete set of Grote's Greece. These, added to the previously-mentioned appliances, will greatly facilitate the genuine student's work, and do, in the best and quickest way, much work that the instructor would otherwise only imperfectly do. I have only to urge that the good work do not stop here, but that the library be increased by the purchase of other works of a standard philological character, treating more at length of matters of interest in the Greek and Roman life. A wall-map of the Mediterranean and adjoining countries, on one scale, for comparative geographical reference, is also very desirable, as it would be in constant use.

LIBRARY.

Our College library, though small, is good, and is in constant and general use by students and faculty. But I can not forbear to call attention to the fact that for an assemblage of a hundred students the library is "exceeding small," and that in no way can money be spent more profitably and justifiably than by making as large appropriations as can be spared for the increase of this indispensable aid and supplement to class-room instruction. A few works of reference are in such general demand that they might profitably be duplicated; yet I recommend this with some hesitation, so many other works are needed. As I said, what we have is

very good, but will sustain profitably any amount of increase. Surely the equipment of the College in apparatus can be benefited in no better way than by the purchase of books.

I am, respectfully, yours,

J. R. SMITH,

Assistant Professor of Latin and Greek, and Librarian.

MECHANICAL AND FREE-HAND DRAWING.

COLUMBUS, *November* 7, 1876.

EDWARD ORTON, PH.D., *President:*

DEAR SIR: I have the honor of submitting my third annual report of this department. The work done by the students has been generally of a fair degree of merit, and has embraced free-hand and mechanical drawing, linear perspective, architectural drawing, geological map drawing, chalk drawing on paper, lithographic chalk drawing, printing and print coloring, plat coloring and lettering, photography and photo-printing, lithographic transfer map drawing, printing and coloring for Prof. Millikin's department. Work has also been done for departments of Political Economy, Chemistry, Zoölogy (pathological drawings), and Military Science

We have also executed, under direction of Prof. Mendenhall, a series of maps in duplicate of this State, relating to the past and present position of education in Ohio. This work was creditably accomplished by students, and formed part of the educational display of the State in the Centennial Exposition; also, a series of diagrams, in curves and disks, illustrating cost of tuition, value of school property, number of school teachers of both sexes, attendance, proportion of white and colored scholars, number of pupils receiving tuition in each branch of study, etc., forming a most complete exhibit of the subject.

Under the supervision of President Orton, I completed a large geological map of Ohio, in oil colors, locating the boundaries of the coal and other formations, the situations of furnaces, coal mines, oil wells, sandstone and limestone quarries, salt works, iron ore and blackband deposits, statistics of coal shipments, sections of local coal veins in counties, etc., making a good representation of the varied mineral wealth of the State.

With some assistance from two students, I also painted, in oil colors, for the Ohio Archæological and Historical Society, a large archæological and historical map of the State, by Col. E. Whittlesey, of Cleveland, showing

the division of the State among the Indian tribes, marking the routes of the military expeditions, sites of battles, forts, Indian trails, war-paths, and villages, ancient mounds, etc., for the Exposition at Philadelphia.

I have accompanied Professors Townshend and Tuttle in some of their investigations of what is known as hog cholera, and, from their dissections of affected animals, on the ground made pathological drawings in water colors.

Several students are now making drawings from plaster models, of which we have a small but varied collection, consisting of the human figure, quadrupeds, architectural ornaments, medallions, busts, etc. Owing to an increased number of students in photography, it has been necessary to enlarge the dark-house.

We could render more assistance to the other departments of the institution if we had a larger lithographic press and larger stones. Skeleton maps could then be printed and other work could be done, which would be of efficient service.

The attendance in this department during the current year has been satisfactory, seventy-one students being enrolled in the several classes in drawing and photography. This may be taken as an indication of an increased interest in matters relating to art among our people—an interest which is shown still further in the elaborate systems of drawing that some of our school boards have recently introduced. If this College is to supplement and complete the best work of the public schools, the establishment and maintenance of a department devoted to art training is seen to be a necessity.

While but few students give time and attention enough to these subjects to become proficients in them, many acquire a practical insight which will materially aid them in forming right estimates upon matters pertaining to art.

I am yours, very respectfully,

THOMAS MATHEW.

CIRCULAR AND CATALOGUE.

FACULTY.

EDWARD ORTON, PH.D.,
PRESIDENT, AND PROFESSOR OF GEOLOGY.

T. C. MENDENHALL, A.M.,
PROFESSOR OF PHYSICS AND MECHANICS.

SIDNEY A. NORTON, A.M., M.D.,
PROFESSOR OF GENERAL AND APPLIED CHEMISTRY.

JOSEPH MILLIKIN, A.M.,
PROFESSOR OF THE ENGLISH LANGUAGE AND LITERATURE, AND OF THE FRENCH AND GERMAN LANGUAGES.

NORTON S. TOWNSHEND, M.D.,
PROFESSOR OF AGRICULTURE.

R. W. McFARLAND, A.M.,
PROFESSOR OF MATHEMATICS AND CIVIL ENGINEERING.

ALBERT H. TUTTLE, M.SC.,
PROFESSOR OF ZOOLOGY AND COMPARATIVE ANATOMY.

WILLIAM COLVIN,
PROFESSOR OF POLITICAL ECONOMY AND CIVIL POLITY.

LUIGI LOMIA,
First Lieut. Fifth Artillery, U. S. A.
PROFESSOR OF MILITARY SCIENCE AND TACTICS.

JOSIAH R. SMITH, A.B.,
ASSISTANT PROFESSOR OF THE LATIN AND GREEK LANGUAGES.

THOMAS MATHEW,
INSTRUCTOR IN FREE-HAND AND MECHANICAL DRAWING.

ALICE WILLIAMS,
ASSISTANT IN DEPARTMENT OF MODERN LANGUAGES.

JOSIAH R. SMITH, A.B.,
LIBRARIAN.

ORGANIZATION AND EQUIPMENT.

The Ohio Agricultural and Mechanical College is founded on the Congressional land grant of July, 1862. By that act a large amount of the public land was turned over to the several States, the proceeds of the sales to be devoted to the better education of the industrial classes. The share of each State was proportioned to its representation in the National Legislature, and thus six hundred and thirty thousand acres came into the possession of Ohio. This munificent gift was unfortunately pressed for sale upon a temporarily overstocked market, and the State realized only fifty-four cents to the acre. The total amount of the sales ($342,450) was, however, put at interest, and when the College was opened in September, 1873, the principal and interest together constituted a productive fund of something over $500,000, the annual income from which slightly exceeds $30,000.

The Legislature having passed an act to authorize the several counties of the State to raise money to secure the location of the College, an offer of $300,000 from Franklin county was accepted by the Board of Trustees, and the College was permanently located at Columbus. The money furnished by Franklin county has been mainly expended in the three following items: 1. The purchase of a valuable farm of three hundred and twenty acres within the corporate limits of the city of Columbus. 2. The erection of a spacious and elegant College building and two dormitories for students. 3. The equipment of the various departments of instruction in the College.

The total value of endowment and property at the present time exceeds $1,000,000.

The departments already established, and the provisions made for giving instruction in them, are as follows:

I. PHYSICS AND MECHANICS.

For these subjects ample provision has been made in the equipment of the institution. It is safe to say that, in the opportunities afforded for thorough study in them, the College already surpasses most of the institutions of the country. Its laboratory is supplied with expensive and well-selected apparatus, designed not only for illustration, but also for original research in all the leading divisions of the science. Students are directed to its use in the way of investigation as soon as they are properly prepared to undertake such work.

II. CHEMISTRY.

The course in Analytical Chemistry provides full instruction in all departments of the science. In connection with the ordinary work of Qualitative Chemistry, the student is taught the use of the spectroscope, and of the blow-pipe in Determinative Mineralogy.

The course in Quantitative Chemistry includes both the volumetric and gravimetric methods. The student will also be assisted in any special branch of the science that he may desire, and take up in detail topics which relate to pharmacy, medicine, agriculture, and other sciences in which the principles of chemistry are applied.

III. ZOÖLOGY.

The subject of Zoölogy, as its growing importance well deserves, has been assigned to a distinct professorship, and means have been provided for making the instruction in this subject thorough, practical, and extensive. A large amount of material, selected with special reference to its availability in teaching, has already been accumulated.

A dissecting-room, with abundant material for the thorough study of veterinary anatomy, is also furnished, while for practical training in microscopy there have been supplied eight microscope stands, representing all the principal modes of construction, and nineteen objectives giving powers up to 2,500 diameters.

IV. BOTANY.

Permanent provision has not yet been made for this subject, but the Professor of Agriculture will give instruction in it for the present. By the will of the late William S. Sullivant, Esq., the ample library of this distinguished botanist has come into possession of the College. It contains not only all of the standard treatises on the subject, but many rare and valuable works—as the *Icones Muscorum*, the *Flora Braziliensis*, etc., etc. An herbarium, representing quite completely the flora of Ohio, is accessible to the student, and charts and models illustrating vegetable structure are provided.

V. GEOLOGY.

The College is able to present unusual advantages for the study o Geology. By act of the Legislature, it has been put in possession of all the collections made by the State Geological Survey during its five years of service, and these collections have been supplemented by valuable additions of fossils and minerals from various sources. The State collection embraces a very complete representation of every geological formation shown in Ohio.

VI. AGRICULTURE.

The department of Agriculture, which also includes the *diseases of animals* and their *medical and surgical treatment*, is provided for in a distinct professorship, the aim of which is to acquaint the student with the theory and practice of a truly rational system in this most important field.

VII. MATHEMATICS.

Under the two professorships that divide the work of mathematics between them, a full course of instruction is provided for, including also the subject of astronomy. A term is given to trigonometry, and one and a half terms are given to each of the two subjects, analytical geometry and calculus. The work of several of the other departments, especially civil engineering, physics and mechanics, and chemistry, require the constant and practical application of the knowledge acquired in mathematical study. A term is given to astronomy, but no special facilities have thus far been furnished in this subject.

VIII. CIVIL ENGINEERING.

This course, which extends through two years, includes surveying, location and construction of roads and railroads, construction of bridges, strength of materials, geodesy, etc. The time of one professor is chiefly devoted to this department. Field work is extensive and varied, for the execution of which a full set of engineering instruments of the finest construction is provided.

IX. ENGLISH, FRENCH, AND GERMAN LANGUAGES.

In the organization of the College, special prominence is given to the modern languages. Some of the students who resort here will study no language but their own, and it is, therefore, imperative that the opportunities for training in English should be made ample, while all who expect to attain any good degree of proficiency in the natural sciences must certainly acquaint themselves with French and German.

The course of study in the English Language and Literature has been made especially complete—as full and thorough as any offered in the colleges of the country. Rhetorical training of all students in the regular courses is also included here.

French and German can be pursued in courses as extensive as the needs of the student may require.

X. LATIN AND GREEK LANGUAGES.

Ample provision is also made for the study of the Latin and Greek

languages, not only in compliance with those terms of the organic law of the College which forbid the exclusion of classical studies, and which declare one of the aims of institutions thus endowed to be "the liberal education of the industrial classes," but also because of the great advantage which such study gives in acquiring a thorough knowledge of our own and other modern languages; and in the last place, but not the least important, because of the relations which they bear to literary, historical, and scientific studies.

XI. POLITICAL ECONOMY AND CIVIL POLITY.

Instruction in this class of studies was begun during the last College year. Subjects of more practical interest and importance do not enter into any courses of study than those that treat of the fundamental principles of government and of the rights and relations of labor and capital.

The Science of Accounts has also been assigned to the professor in the above named department, and students can now acquaint themselves thoroughly not only with the theory of book-keeping, but also with such practical application of it as are best suited to the callings which they are expected to follow.

XII. MECHANICAL AND FREE-HAND DRAWING.

Instruction in these subjects have been provided for in the College, and all needful facilities are furnished by which those who wish may acquire skill in the several departments of Drawing.

Practical lithography and photography are also taught in this department, all the necessary apparatus being placed at the student's disposal.

XIII. MILITARY SCIENCE AND TACTICS.

In accordance with an act of Congress, an officer of the United States Army has been detailed by the War Department to give instruction in the subjects named above. The subject of Military Science is taught in recitations and lectures to such students as elect it. Military drill is made obligatory upon all male students except those that are excused on the grounds of physical disability or conscientious scruples. The time devoted to drill at present is two and one-half hours per week.

DEGREES AND COURSES OF STUDY.

Three degrees are offered by the College, viz., Bachelor of Arts (B.A.), Bachelor of Science (B.S.), and Civil Engineer (C.E.). In addition to these degrees, certificates of work done in the several departments will be granted, as hereafter stated.

REQUIRED COURSE.

For students who desire to complete a full course of study, and to receive any of the degrees of the College, the following general scheme has been established. When admitted to the College, they shall enter upon a prescribed course of study, which occupies two years. The aim has been to include in this two-years' course those branches of which no educated person can afford to be ignorant, and at the same time to lay a proper foundation for all subsequent study. This course is constituted as follows:

FIRST YEAR.

First Term—Human Physiology, English Language, Algebra.
Second Term—Physical Geography, Structural Botany, English Language, Geometry.
Third Term—Physical Geography, Systematic Botany, Algebra.

SECOND YEAR.

First Term—Physics, Chemistry, Zoölogy.
Second Term—Physics, Chemistry, Geometry.
Third Term—Physics, Chemistry, Plane and Spherical Trigonometry.
History throughout the year.

It is believed that when the student has completed the above-named course, his judgment and taste will be so formed that he can decide intelligently upon the particular line in which his study shall henceforth lie. A large liberty is therefore accorded to him in his subsequent college work.

SUPPLEMENTARY COURSES.

The remaining studies of each department of the College, with the exception of mathematics, are thrown into two-years' courses of daily recitations, and six of these courses (or their equivalents) are necessary for graduation.

Furthermore, the departments of the College are divided into three schools, termed respectively—

I. *The School of Exact Sciences*, embracing Mathematics, Civil Engineering, Physics and Mechanics, Chemistry.

II. *The School of Natural History*, embracing Botany, Zoölogy, Geology, and Agriculture.

III. *The School of Letters and Philosophy*, embracing the English Language and Literature, German Language and Literature, French Language and Literature, Latin Language and Literature, Greek Language and Literature, Political Economy and Civil Polity.

The only restriction upon the liberty of the student in the remainder of the courses is that one of the six required courses shall be taken from each of the schools above named.

If he is a candidate for the degree of B.A., the remaining three courses shall be selected from the School of Letters.

If a candidate for the degree of B.S., he must make his selection of the three additional courses from the Schools of Natural History and Exact Sciences.

If he seeks the degree of C.E., he must take the studies of the School of Exact Sciences. One year in each of two courses may, with permission of the Faculty, be counted an equivalent for a two-years' course in one. Six of these courses will, with three daily recitations, occupy four years. If the number of daily recitations is increased, the time occupied for the completion of the work assigned will be correspondingly reduced.

The range of instruction proposed in the several departments can be learned from the appended statements:

THE SCHOOL OF EXACT SCIENCES.

MATHEMATICS.

ONE YEAR.

First Term—Analytical Geometry of two dimensions.
Second Term—Analytical Geometry of three dimensions; Differential Calculus.
Third Term—Integral Calculus.

CIVIL ENGINEERING.

FIRST YEAR.

First Term—Surveying, Navigation.
Second Term—Descriptive Geometry, Isometric Drawing, etc.
Third Term—Astronomy, Shades, Shadows, and Perspective.

SECOND YEAR.

First Term—Locating and Constructing Roads, Railroads, etc.
Second Term—Mahan's Civil Engineering, Strength of Materials, etc., Geodesy.
Third Term—Bridges and Bridge-Drawing, Stone-cutting, Walls, Arches, etc.

Text-Books.—The works of Loomis on Algebra, Geometry, and Astronomy In parts of the course, works by Davies, Warren, Church, Gillespie, Mahan, Haupt, Worthen, and others.

The parts of Chemistry and Physics especially pertaining to Civil Engineering are studied under the direction of the professors in those departments.

Students are taught and practiced in the use of the transits, level, plane-table; globes, and other astronomical apparatus. They are also taught to determine latitude, the variation of the magnetic needle: and, in general, all practical field-work pertaining to engineering.

PHYSICS AND MECHANICS.

FIRST YEAR.

First Term—Mechanics.

Second Term—Acoustics and Optics.

Third Term—Optics.

SECOND YEAR.

First Term—Heat.

Second Term—Heat and Electricity.

Third Term—Electricity.

There will be, in addition, an advanced course in Mechanics, comprising one year of laboratory work in the Mechanics of Solids, Liquids and Gases, Strength of Materials, Elements of Machines, etc, combined with the study of Statics and Dynamics, and including the last year of the course in Physics.

Throughout the whole course, the work will be very largely done in the laboratory, and opportunity will be afforded for special study in any direction coming within the range of the department.

Text-Books.—Deschanel's Physics, Todhunter's Mechanics, Stewart's Heat, Maxwell's Theory of Heat, Pickering's Physical Manipulations, Kohlrausch's Physical Measurements.

CHEMISTRY.

FIRST YEAR.

First Term—Qualitative Analysis: Reactions of Single Bases and Acids, Exercises in Blow-pipe and Flame Reactions.

Second Term—Qualitative Analysis continued: Determination of Mixtures, Blow-pipe Mineralogy. Quantitative Chemistry begun.

Third Term—Quantitative Analysis.

SECOND YEAR.

Quantitative Analysis: Special studies in Chemistry applied to Pharmacy, to Agriculture, to Manufactures, and to the Arts.

Text-Books.—Bloxam's Chemistry, Fowne's Chemistry, Galloway's Qualitative Chemistry, Will's Qualitative Chemistry, Fresenius's Quantitative Chemistry, Caldwell's Agricultural Chemistry.

Books of Reference—Watt's Dictionary of Chemistry, Gmelin's Hand-Book of Chemistry, Wagner's Chemical Technology, Graham-Otto's Chemie, Rose's Analytischen Chemie. Gorup-Besanez's Physiologischen Chemie, Brush's Determinative Mineralogy.

THE SCHOOL OF NATURAL HISTORY.

BOTANY.

FIRST YEAR.

First Term—Structural and Physiological Botany.
Second Term—Structural and Physiological Botany.
Third Term—Systematic Botany. (Phænogamia.)

SECOND YEAR.

First Term—Systematic Botany. (Gramineæ and Cryptogamia.)
Second Term—Economic Botany, or Botany as applied to the Arts.
Third Term—Economic Botany, as applied to Garden, Field, and Forest culture.

Text-Books and Books of Reference.—Gray's Botanical Text-Book, Loudon's Encyclopedia of Plants, Paxton's Botanical Dictionary, Lowe's British Grasses, Berkeley's Cryptogamic Botany, Cooke's Hand-Book of British Fungi, Darlington's American Weeds and Useful Plants.

ZOOLOGY AND COMPARATIVE ANATOMY.

The wants of students entering this department are found to vary to such an extent in relation to each individual's plans for the future, that four separate years of study are presented, any two of which will be received as equivalent to one of the two-years' courses referred to on page —. They are as follows:

A. ZOÖLOGY.

First Term—Vertebrates.
Second Term—Arthropods, Mollusks, Echinoderms.
Third Term—Worms, Cœlenterates, Protozoa.

The first term will be given to the study of the more familiar animals, particularly those of our own State, especial attention being paid to the important subject of Fish Culture, for which provision will be made during the present year; the second term will be largely given to the study of the structure and life-history of Insects; and the third in great part to the study of the Parasitic Worms—both topics of the greatest practical importance.

The work of this year will be by laboratory exercises, accompanied with lectures.

B. VETERINARY ANATOMY.

This year will be almost entirely devoted to practical work in the dissecting-room upon the anatomy of the domestic animals; all the smaller animals, such as the sheep, pig, dog, etc., being carefully dissected by the student—especially those parts most liable to injury or disease—while the horse and ox will be dissected whenever opportunity offers.

Chauveau's Anatomy of the Domestic Animals is used as a manual.

C. COMPARATIVE ANATOMY.

This year will be given to a study of the Anatomy of Vertebrates, with special reference to light thrown by it upon Human Anatomy.

Huxley's Anatomy is used as a text-book, while the work will be fully illustrated by the synoptical series of skeletons in the museum of the department, a complete manikin, and frequent dissections and demonstrations of the soft parts of the lower animals.

D. PHYSIOLOGY.

This year will be devoted to recitations from Flint's Physiology, lectures upon embryology, and a course of practical instruction in the use of the microscope.

Students having in view merely the acquirement of a general education are recommended to make their course of the first and fourth of these years; those purposing to follow agriculture are recommended to the second and fourth; while those who wish to prepare themselves to enter the practice of medicine are recommended to the third and fourth

In the required course, Cleland's Animal Physiology and Nicholsons's Zoloögy are used as text-books.

The following works, among others, will be used as books of reference in the subjects of Zoology and Comparative Anatomy: Chauveau's Anatomy of Domestic Animals, Flower's Osteology of Mammals, Owen's Anatomy of Vertebrates, Huxley's Anatomy of Vertebrates, Parker's Monograph of the Shoulder-Girdle, Owen's Anatomy of Invertebrata, Packard's Guide to the Study of Insects, Dana's Crustacea, Cobbold's Entozoa, Woodward's Mollusca, Agassiz's Contributions to Natural History, Dana's Zoöphyta, Pritchard's Infusoria, Carpenter's Foraminifera, Todd's Cyclopedia of Anatomy.

GEOLOGY AND PALEONTOLOGY.

For successful study in this department, a knowledge of the elements of chemistry, physics, zoölogy, and botany is necessary. It is therefore required that students shall complete the study of these subjects in the required course before entering upon work in geology.

FIRST YEAR.

First Term—Physiographic and Lithological Geology.

Second Term—Dynamical Geology, Historical Geology, including the Elements of Paleontology begun.

Third Term—Historical Geology completed.

SECOND YEAR.

First Term—Economical Geology: Building-stones, Limestones, Cements, Ores, etc., with special reference to the mineral resources of Ohio.

Second Term—Economical Geology continued: Coal, Petroleum, Salt, etc.

Third Term—Relations of Geology to Agriculture.

Text-books and Works of Reference.—Dana's Manual of Geology, Jukes's Manual of Geology, Lyell's Student's Elements of Geology, Lyell's Principles of Geology (11th edition), Nicholson's Manual of Paleontology, Geological Reports of Ohio and other States.

AGRICULTURE.

FIRST YEAR.

First Term—Soils, their Composition and Adaptations; Pastures, Meadows, Field Crops, Manures and Fertilizers.

Second Term—Tillage, Draining, Irrigation, Roads, Fences, Buildings, Implements and Machinery.

Third Term—Orchards, Vineyards, Gardens, Hedges, Forests, etc.

SECOND YEAR.

First Term—Domestic Animals, Varieties, Adaptations, and Management; Wool-growing; the Dairy.

Second Term—Diseases of Animals—Medical and Surgical treatment.

Third Term—Diseases of Animals—Medical and Surgical treatment.

THE SCHOOL OF LETTERS AND PHILOSOPHY.

ENGLISH LANGUAGE.

FIRST YEAR.

First Term—Anglo-Saxon—March; Anglo-Saxon Reader, Lectures on the Anglo-Saxon Period.

Second Term—Early English—The Vision of Piers Plowman, Lectures on the Early English Period.

Third Term—Later English—Spenser: First Book of the Faerie Queen; Shakespeare, Select Plays; Lectures.

SECOND YEAR.

First Term—Rhetoric; Essays, Analytical and Critical; Lectures on Modern English Literature.

Second Term——Logic, Formal and Applied; Lectures on Modern English Literature concluded, Essays.

Third Term—Comparative Philology, with especial reference to English; Farrar's Families of Speech, Lectures, Essays.

The text-books in English in the required course are Morris's English Accidence; Hale's Longer English Poems, and Day's Rhetorical Praxis.

FRENCH LANGUAGE.

FIRST YEAR.

First Term—Duffet's French Grammar, Oppen's Reader (Grammar and Exercises).

Second Term—Grammar continued. Masson's French Classics.

Third Term—De Maistre's Voyage autour de ma Chambre, etc. Selections from Beranger.

SECOND YEAR.

First Term—Molliere's Les Fourberies de Scapin and Racine's Athalie, Corneille's Cinna.

Second and Third Terms—Roman dun jeune homme pauvre, Bridge's History of French Literature, with Lectures on the Language and Literature.

GERMAN LANGUAGE.

FIRST YEAR.

First Term—Whitney's Grammar and Reader.

Second Term—German Lyrics, with Grammatical Exercises.

Third Term—Schiller's Marie Stuart. Composition.

SECOND YEAR.

First Term—Goethe's Egmont, History of Literature and Composition.

Second and Third Terms—Lessing's Emilia Gallotti; History of German Literature and Language, with Lectures.

LATIN LANGUAGE.

FIRST YEAR.

First Term—Livy, Selections; History of Rome.

Second Term—Livy continued.

Third Term—Horace, *Odes.*

During the year lectures were given on Roman History and Antiquities, and the reading of the authors was accompanied with exercises in Latin prose composition (weekly) and in written translation.

SECOND YEAR.

First Term—Horace, *Satires, Epistles,* and *Ars Poetica.*

Second Term—Tacitus, *Agricola* and *Germania.*

Third Term—Terence, *Andria* and *Adelphæ;* Cicero and Quintilian, *Ars Oratoria.*

Lectures were given during the year on Latin Literature and Philology.

Admission.—Candidates for the first-year class will be examined as follows: In Latin Grammar (Allen and Greenough's is preferred); writing Latin; four books of Cæsar's *Commentaries;* six orations of Cicero; and six books of Virgil's *Æneid.* Allen and Greenough's Shorter Course is recommended as containing a sufficient amount of Latin prose.

GREEK LANGUAGE.

FIRST YEAR.

First Term—Xenophon, *Memorabilia.*

Second Term—Herodotus, Selections; History of Greece.

Third Term—Euripides, *Alcestis.*

Lectures were given during the year on Greek History, Antiquities, and the Drama.

SECOND YEAR.

First Term—Homer, *Odyssey.*

Second Term—Plato, *Phædo;* Sophocles, *Œdipus Tyrannus.*

Third Term—Æschylus, *Prometheus Vinctus;* Demosthenes, *De Corona.*

Lectures were given during the year on Greek Literature and Philology. Exercises in Greek prose composition (weekly) and in written translation constitute an important feature of the course.

Admission.—Candidates for the first-year class will be examined as follows: In Greek Grammar (Goodwin's is preferred); in writing Greek, with the accents; and the first one hundred and eleven pages of Goodwin's Greek Reader (or three books of Xenophon's *Anabasis*).

POLITICAL ECONOMY, CIVIL POLITY, ACCOUNTS.

POLITICAL ECONOMY.

FIRST YEAR.

First Term—The Industrial Forces.

Second Term—The Science of Exchanges; Money; Credit; Commerce; the Interference of Government.

Third Term—The Distribution of the Avails of Industry; Taxation; Interest; Rent;

Profit; Wages; the Influences of Machinery; the Issues between the owners of Capital; Assurance; Coöperation; Associated Labor; Communistic Theories.

SECOND YEAR.

First Term—The Laws of the Growth and Movement of Populations; Immigration and Emigration.

Second Term—The Influence of the Distribution of the Ownership of Land on the Characters of Civilization, and on the Wealth, Liberty, and Governments of Nations.

Third Term—The Physical, Intellectual, and Moral Conditions of Social Progress and Social Amelioration; the Unfortunate Classes and Persons in Society.

Books of Reference.—Writings of J. S. Mill, Walker, Adam Smith, Carey, Fawcett, Cairnes, Thornton, Spencer, Macleod, Bastiat, Malthus, Allison, Godwin, Maine, Cobden Club Publications, Census Reports, Statistics of Ohio, Reports of Public Institutions of Ohio.

CIVIL POLITY.

FIRST YEAR.

First Term—The Theory of Rights: Rights of the various Persons in Community; the Citizen.

Second Term—The Political Guarantees of Rights; the Functions of Governments.

Third Term—The Powers, Prohibitions, and Limitations of Government by Organic Constitutions; the Principles of Legislation.

SECOND YEAR.

First Term—The History of the Progress and Development of Constitutions and of Laws.

Second Term—State Constitutions of the United States; Municipal law.

Third Term—The Federal Constitution and Government; its Relations to the States.

Books of Reference.—The Federalist, Writings of Thomas Jefferson, James Madison, Adams, Story, Elliott's Debates, the Works of De Tocqueville, De Lolme, Montesquieu, Grotius, Jeremy Bentham, Hallam, Austin, Locke, Forsyth, Lieber, Parsons, Draper, State Constitutions, Constitution of the United States.

SCIENCE OF ACCOUNTS.

First Term—The General Principles of Double-Entry Book-Keeping.

Second Term—The Applications to the Business of the Merchant, of the Farmer, and of the Manufacturer.

Third Term—Joint Stock Company Book-Keeping; Bank Book-Keeping; City, County, and State Accounts; the Uses of Vouchers, Checks, Drafts, Bills of Exchange, Letters of Credit, etc.

Books of Reference.—Treatises of Haswell, Chittenden, Cott, Bryant, Stratton and Dehan, Duff, Mayhew, Selden, Gilbert, Watters.

PROVISIONS FOR SPECIAL STUDENTS.

To students entering the College for the purpose of taking some special study, and who do not propose to complete a regular course, *full freedom in the selection of the branches which they will pursue is granted, subject only to the necessary limitation that they are prepared to take up with advantage the studies*

which they select. They will enter the classes organized for the regular courses, and they can not be allowed to impair the quality of work done in the classes through their own inadequate preparation. Advanced students will find every facility for special work.

SPECIAL COURSE IN AGRICULTURE:

The College recognizes its obligations—imposed in the terms of the grant to which it owes its existence—to the great industrial interest of Agriculture. This obligation it has aimed to meet in the establishment of departments for thorough training in those branches of science upon which agriculture depends, *and also in fixing its standard of admission so that students may enter its college classes from the common schools.*

To the question, what education it proposes to furnish to the farmer, it may be answered that such a course as would secure the degree of Bachelor of Science from the College could be made to include all of the branches which in reality constitute agriculture, and, as far as theoretical instruction goes, could scarcely be improved in its adaptations to the necessities of the American farmer.

But this course requires for its completion six years from the common school, and there is good ground to fear that a young man who has been withdrawn for six years from the farm will scarcely return to it again. For the training, then, of the most of those who intend to devote themselves to practical agriculture, a scheme requiring less time must be found. In accordance with this view, a three-years' course has been established, and is hereby submitted, which, it is believed, combines the general and the special as fairly as may be, and which offers to the young farmer a very practical and serviceable range of study. This course is shown in the appended schedule:

FIRST YEAR.

First Term—Human Physiology, English Language, Algebra.
Second Term—Physical Geography, Structural Botany, English Language, Geometry.
Third Term—Physical Geography, Systematic Botany, Algebra.

SECOND YEAR.

First Term—Physics, Chemistry, Zoölogy.
Second Term—Physics, Chemistry, Geometry.
Third Term—Physics, Chemistry, Plane Trigonometry.
History throughout the year.

THIRD YEAR.

First Term—Zoölogy, Agricultural Chemistry, Practical Agriculture.
Second Term—Diseases of Animals, their Medical and Surgical Treatment; Agricultural Chemistry, Practical Agriculture.

Third Term—Diseases of Animals, their Medical and Surgical Treatment; Geology as related to Agriculture; Practica. Engineering

It will be observed that this scheme agrees for two years with the prescribed course already given, while the third year supplements that course in as practical a manner as possible, and adapts it to the demands of this particular calling. In the strictly agricultural part of the course, practice will be constantly combined with theory, and the student will thus retain familiarity with the life from which he has come, and to which he expects to return.

TRAINING FOR TEACHERS AND STUDENTS IN MEDICINE.

The advantages offered by the College in the training required for two callings, in particular, are so great that special attention is invited to them. To students fitting themselves to become teachers of Natural Science, and also to those designing to pursue the study of Medicine, courses of study could not be more perfectly adapted, if they were designed expressly for such service. The resources of the College in the way of collections, and the methods of study adopted in the more advanced classes—the work being mainly done in laboratories and museums—make it safe to say that a very important addition to the educational facilities of the State is here made.

All students are required to take three daily recitations or their equivalent in laboratory work.

Certificates will be furnished to those who complete either the work of the Agricultural course, or of any special department.

ADMISSION.

For Admission to the College, students must possess a competent knowledge of the branches taught in the common schools, viz., Reading, Orthography, Writing, Grammar, Geography, Arithmetic, and of Algebra through simple equations.

The attention of those proposing to enter the College is especially directed to the terms above given. A competent knowledge of the common school branches is required. The College does not undertake to do the work which the common schools are able and willing to do, viz., that of grounding the student in the elements of an English education. He must bring with him a fair measure of the training which these schools are prepared to give. If it be asked what is a competent knowledge of these branches, it may be answered that the candidate should certainly have knowledge enough of them to entitle him to a teacher's certificate from a county board of examiners.

Advanced standing will be granted to students upon their sustaining examination in any part of the course, prescribed or elective.

It is, however, to be borne in mind that the amount of work done in several branches of science in the required course of the College, and the quality of work done in all, by reason of the superior facilities provided, render these studies quite different from those that are known by the same name in the schools of the State. Physics and Chemistry, for instance, each occupies a year of daily recitations, while Botany, Physiology, and Zoölogy are able to avail themselves of all the resources of their respective departments. All students, therefore, are earnestly advised on entering the College to shape their work by the required course; in other words, to adopt this course as far as possible. Their studies are thus made consecutive, and a degree of symmetry is given to their education, so far as it is completed here. It is expected that many students will be able to enter the second year of this course.

Students proposing to take the degree of A.B. will be examined in the usual amount of preparatory Latin and Greek, as shown in the schedules of these departments.

Students entering from other colleges will be required to bring certificate of honorable dismission.

EXPENSES.

TUITION IS FREE IN ALL DEPARTMENTS OF THE COLLEGE.

A charge of $5 per term, or $15.00 per year, is made against all students, under the head of incidental expenses. Each student will also be charged with the cost of the materials he consumes in laboratory work.

Two college dormitories have been provided, in one of which board and furnished rooms can be obtained at a charge of $4 per week, two students occupying one room. If the student furnishes and takes care of his own room, he obtains board for $3.25 per week. Provision for lighting and heating the rooms must be made at the student's expense. Coal will be furnished at cost. *Board bills must be paid monthly in advance.*

In addition, the College charges each student $4.00 per term, or $12.00 per year, for room rent. Seventy-five students can be accommodated in this building.

The second dormitory contains ten rooms, and is designed for students wishing to board themselves; or, if the rooms are not all occupied by such, they can be used by students who desire to room on the College grounds while boarding elsewhere. The rooms are provided with stoves that can be used in cooking. They are designed for two students, each one being charged $4.00 per term, or $12.00 per year, for room rent.

A deposit of $5.00 is required at the beginning of every term from all students occupying rooms in the dormitories, as a guarantee against willful injury to rooms or halls. For damages in either dormitory that can not be traced to the individuals committing them, an assessment will be made upon the guarantee fund of the dormitory in which they occur. In case no assessment is made, the deposit will be returned at the end of the term.

All College dues, except laboratory charges, are to be paid in advance at the beginning of each term.

A College uniform has been adopted with which all male students are required to provide themselves. The cost of the suit is about $20.00.

The College is now connected with the central portions of the city by two street railroads. Board, with furnished rooms, can be obtained in

private families within convenient distance of the College, at rates varying from $4.00 to $5.00.

SUMMARY.

The expenses of a term of twelve weeks will include the following items:

Incidentals	$5 00
Room rent	4 00
Board in College dormitory	48 00
Washing, light, etc	8 00
Total	$65 00

Students boarding themselves reduce this aggregate by at least $20.00.

CALENDAR.

The Winter term commences on Wednesday, January 3, 1877, and continues twelve weeks, closing on Tuesday, March 27.

The Spring term commences on Wednesday, April 4, and continues eleven weeks, closing on Tuesday, June 19.

The Fall term commences on Wednesday, September 12, and continues fourteen weeks, closing on Tuesday, December 18.

For further information, address the President or any member of the Faculty, or the Secretary of the Board of Trustees.

CATALOGUE OF STUDENTS.

NAME.	RESIDENCE.	COUNTY.
Anderson, Newton M	Columbus	Franklin.
Baily, Elmor S	Waynesville	Warren.
Baily, George S	Waynesville	Warren.
Barcus, Harry	Columbus	Franklin.
Bates, Fanny P	Columbus	Franklin.
Bennett, Charles M	Urbana	Champaign.
Bennett, Edwin M., Jr	Urbana	Champaign.
Bingham, Edward	Columbus	Franklin.
Bixler, John A	Brookville	Montgomery.
Bixler, Samuel J	Brookville	Montgomery.
Brossman, C. E	Lithopolis	Fairfield.
Brown, Argo A	Washington	Fayette.
Brown, C. N	Ironton	Lawrence.
Burt, William	West Lafayette	Coshocton.
Butler, A. C	Columbus	Franklin.
Cahill, Helen	Minneapolis, Minn	
Cherryholmes, W. K	Millersburg	Holmes.
Coit, Belle M	Columbus	Franklin.
Coit, Stanton	Columbus	Franklin.
Colvin, Cuvier A	Columbus	Franklin.
Comstock, C. B	Columbus	Franklin.
Corwin, Edwin E	Columbus	Franklin.
Courtright, Effie Z	Greencastle	Fairfield.
Cowles, Alfred H	Cleveland	Cuyahoga.
Cunningham, Arthur J	Columbus	Franklin.
Dahl, Harry B	Washington	Fayette.
Dietrich, Charles H	Defiance	Defiance.
Dix, Mary A	Columbus	Franklin.
Donaldson, John M	Columbus	Franklin.
Doney, S. D	Columbus	Franklin.
Doremus, Frank S	Columbus	Franklin.
Doty, Frank V	Middletown	Butler.
Downing, Wesley C	Middleport	Meigs.
Dresel, Herman G	Columbus	Franklin.
Dun, W. Angus, Jr	London	Madison.
Farrar, Wyatt	Hillsborough	Highland.
Fay, F. Willis	Columbus	Franklin.
Ferneau, Thomas B	Bainbridge	Ross.
Fieser, Louis F	Columbus	Franklin.
Galloway, Harry N	Columbus	Franklin.
Garvin, Samuel T*	Columbus	Franklin.
Gilbert, Matthew J	St. Louis, Mo	
Gill, Herbert R	Columbus	Franklin.
Glenn, Josephine T	Columbus	Franklin.
Gregory, Hiram D	Portsmouth	Scioto.
Guitner, Ada J	Westerville	Franklin.
Hall, Calvin C	Crestline	Crawford.
Hamilton, William D	Columbus	Franklin.
Hardy, George	Columbus	Franklin.
Hoddy, William J	Columbus	Franklin.
Holmes, J. M	South Charleston	Clarke.
Howald, Ferdinand	Columbus	Franklin.

*Deceased.

CATALOGUE OF STUDENTS—Continued.

NAME.	RESIDENCE.	COUNTY.
Howard, Curtis C	Columbus	Franklin.
Hubbard, H. M	Columbus	Franklin.
Hughes, Frank L	Columbus	Franklin.
Humphrey, J. S	Findlay	Hancock.
Hutchinson, H. B	Columbus	Franklin.
Hyatt, Edward	Augusta	Carroll.
Hyatt, Harry	Augusta	Carroll.
Innis, Adam G	Columbus	Franklin.
Innis, Louvina C	Columbus	Franklin.
Innis, Maxwell P	Columbus	Franklin.
Innis, Sarah G	Columbus	Franklin.
Jones, Anna	Hilliard	Franklin.
Jones, Henry O	Columbus	Franklin.
Jones, J. Paul	Hilliard	Franklin.
Jones, Willis S	Shreve	Wayne.
Junk, Pryor W	Mt. Sterling	Madison.
Keffer, Frederic	Philadelphia, Pa	
Keffer, Mary	Philadelphia, Pa	
Kellerman, M. F	Cedar Hill	Fairfield.
Kelly, Thomas	McArthur	Vinton.
Kinnaird, William J	Camp Chase	Franklin.
Knabenshue, W. C	Columbus	Franklin.
Khoeler, Nicholas	Hilliard	Franklin.
Layman, Charles A	Columbus	Franklin.
Langfitt, W. C	Millersburg	Holmes.
Linton, Elizabeth F	Columbus	Franklin.
Lisle, Stephen D	Millersburg	Holmes.
Loving, Joseph S	Columbus	Franklin.
Markley, Horatio	Nevada	Wyandot.
Martin, Gideon D	Carroll	Fairfield.
Mayers, C. R	Millersburg	Holmes.
McCloud, Richard H	London	Madison.
McCollum, Leon	Tiffin	Seneca.
McCormick, John H	Columbus	Franklin.
McCoy, Homer W	South Point	Lawrence.
McClung, William E	Columbus	Franklin.
McDonald, John M	Columbus	Franklin.
McFadden, John F	Cadiz	Harrison.
McFarland, Fanny S	Columbus	Franklin.
McLaughlin, J. B	Bainbridge	Ross.
McMackin, Amasa B	Newcome stown	Tuscarawas.
McQuigg, John	Pomeroy	Meigs.
Miller, William H	McArthur	Vinton.
Miner, Ellen J	Columbus	Franklin.
Miskimen, John C	Newcomerstown	Tuscarawas.
Moore, H. C	Columbus	Franklin.
Morrison, M. Frank	Columbus	Franklin.
Mustaine, Jefferson K	West Liberty	Logan.
Myers, James F	Cincinnati	Hamilton.
Noble, Warren F	Tiffin	Seneca.
Nutting, M. E	Kent	Portage.
Palmer, Charles O	Cleveland	Cuyahoga.
Perry, Oliver H	Columbus	Franklin.
Postle, Frank L	Camp Chase	Franklin.
Pratt, Charles E	South Charleston	Clarke.
Preston, Eva M	Columbus	Franklin.
Pugh, George E	Reynoldsburg	Franklin.
Raudabaugh, John	Celina	Mercer.
Rector, Allen T	Kinderhook	Pickaway.
Robertson, H. A	Haskins	Wood.
Rodgers, William P	Ironton	Lawrence.
Samuel, Minnie P	Columbus	Franklin.

CATALOGUE OF STUDENTS—Continued.

NAME.	RESIDENCE.	COUNTY.
Seeley, Uri, Jr	Austinburg	Ashtabula.
Shepherd, Chester C	Columbus	Franklin.
Shinn, Charles A	Selma	Clarke.
Short, Sidney H	Columbus	Franklin.
Smith, F. Zell	Lithopolis	Fairfield.
Smith, William P	Hopetown	Ross.
Smythe, Perry P	Columbus	Franklin.
Snyder, Henry	Springfield	Clarke.
Spahr, C. B	Columbus	Franklin.
Spielman, John A	Tiffin	Seneca.
Stambaugh, George	Gahanna	Franklin.
Sullivant, Jane D	Columbus	Franklin.
Tallmadge, Darius	Columbus	Franklin.
Tompkins, Harry P[a]	Columbus	Franklin.
Towne, Robert S	Portsmouth	Scioto.
Townshend, Alice M	Columbus	Franklin.
Townshend, Arthur B	Columbus	Franklin.
Tryon, Arthur G	Willoughby	Lake.
Waddell, Harry D	Greenfield	Highland.
Ward, John C	Willoughby	Lake.
Warner, Frank	Chillicothe	Ross.
Warner, Cora	Chillicothe	Ross.
West, James P	St. Clairsville	Belmont.
Wilson, William M	Yellow Springs	Greene.
Wikoff, John B	Columbus	Franklin.
Williams, Harley	Columbus	Franklin.
Winder, Sebastian C	Atwater	Portage.
Yarnell, M. A	Barnesville	Belmont.

[a] Deceased.